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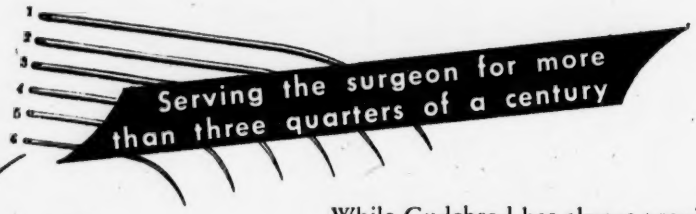

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Original Articles

Impending Death Under Anesthesia*

HAMILTON BAILEY, F.R.C.S. (Eng.), F.A.C.S., F.I.C.S.† (Hon.)
LONDON, ENGLAND

THE expectation of death under an anesthetic, an ordeal which every surgeon is bound to encounter, is 1 per 1,000 when calculated on a very large number of cases from five teaching hospitals on three continents. Most emergency surgeons are removed from the facilities of a teaching hospital; their patients are often critically ill and must be prepared for operation hastily. For these reasons an emergency surgeon comes face to face with impending death under anesthesia relatively often.

My introduction to this important subject was when, as a student, I was called upon to help in an unavailing attempt to revive a girl who had collapsed under nitrous-oxide anesthesia. Since that time I have often reflected how profitable it would be to have organized drill to prepare us for these cases. Unfortunately, with an operating room staff changing constantly, this is seldom practical.

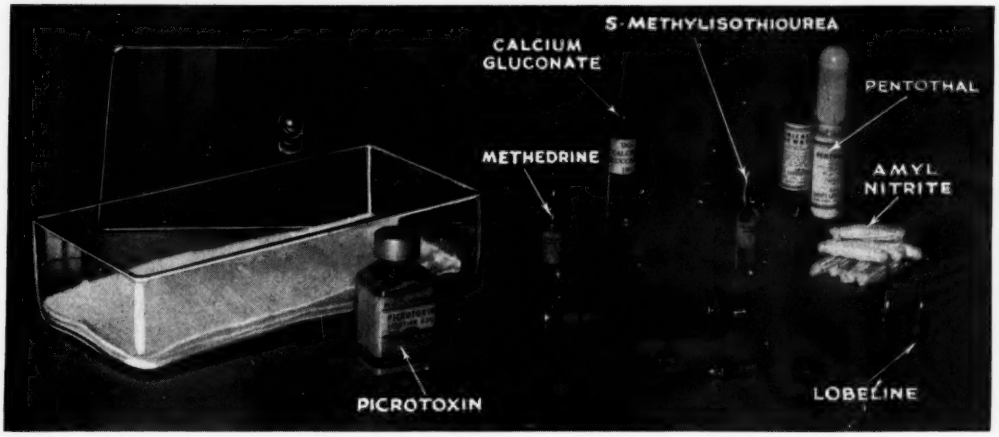

Fig. 1. Anesthetic Emergency Outfit. (a) Methedrine (general pressor substance). (b) Amyl nitrite (cardiac arrest or cardiac depression). (c) Alphalobeline (respiratory center stimulant). (d) Calcium gluconate (ether convulsions). (3) Pentothal (anesthetic convulsions. (f) Picrotoxin (antidote to pentothal). (g) S-methylisothiourea (collapse under spinal anesthesia).

To take the trouble to procure a distinctive jar and place within it certain resuscitative agents, to seal it with ad-

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† Surgeon, Royal Northern Hospital, London.

I.C.

hesive tape, to label it "Anesthetic Emergency Outfit," and to know where it is kept in the operating room is not asking much. It is worth while overcoming the inertia that alone prevents these agents (Fig. 1) from being at hand when they are needed so desperately. To procrastinate will assuredly lead to regret.

Those who stop breathing and give rise to anxiety while under general anesthesia can be segregated into two fundamental categories:

(1) Blue asphyxia (primarily respiratory)
(2) White asphyxia (primarily cardiac)

It is to the far more serious condition of white asphyxia that special attention will be directed.

WHITE ASPHYXIA

Technic of cardiac massage: With a sweep of the knife the upper abdomen is entered in the middle line immediately beneath the xiphisternum. The incision must be long enough to admit the hand. When counterpressure is exerted by the base of the left palm on the lower left costal margin, effective intermittent pressure can be exerted on the ventricles by the pulps of the right hand beneath the diaphragm (Fig. 2). For the first half minute these movements should be quick and forcible. After half a minute (so as not to overtire the hand) the movements should become slower. Sometimes one cardiac contraction takes place but the heart does not continue to beat. In nearly all such cases it requires only a little further perseverance to experience the incredible satisfaction

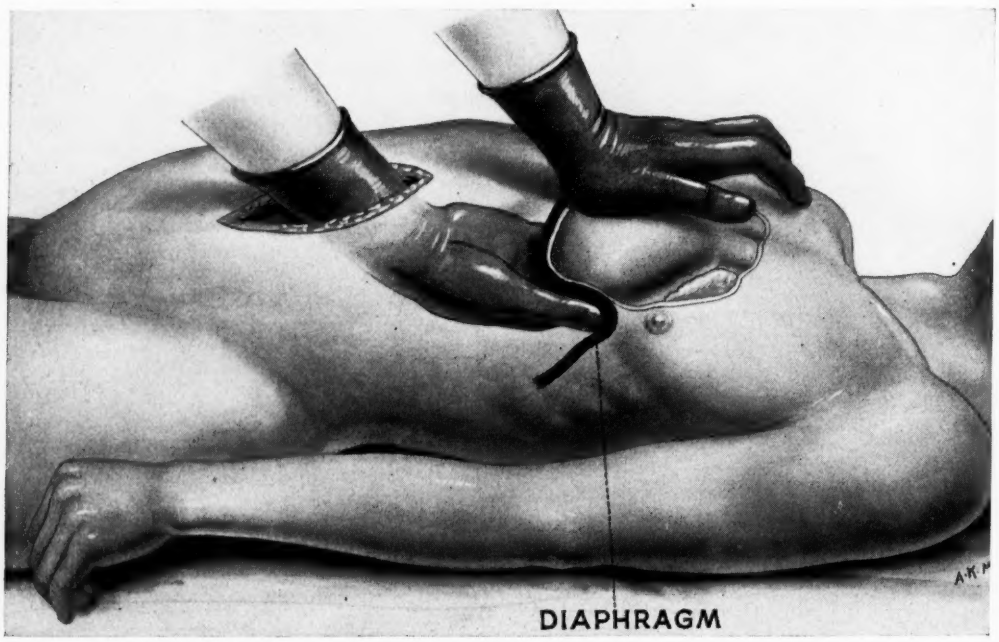

Fig. 2. Standard method of performing cardiac massage.

of feeling the heart spring into automatic activity. The beats strengthen; they strengthen so quickly that by the time the surgeon has given a sigh of relief the contractions become so strong that the heart knocks against the tired hand beneath the diaphragm. Whatever may be the travails that accrue from the choice of the practice of surgery as a profession, thrice certain is it that in no walk of life can there be a greater reward of assiduous labor than that of seeing before one's eyes life itself returning.

In each of my cases sub-diaphragmatic massage, just described, was used.

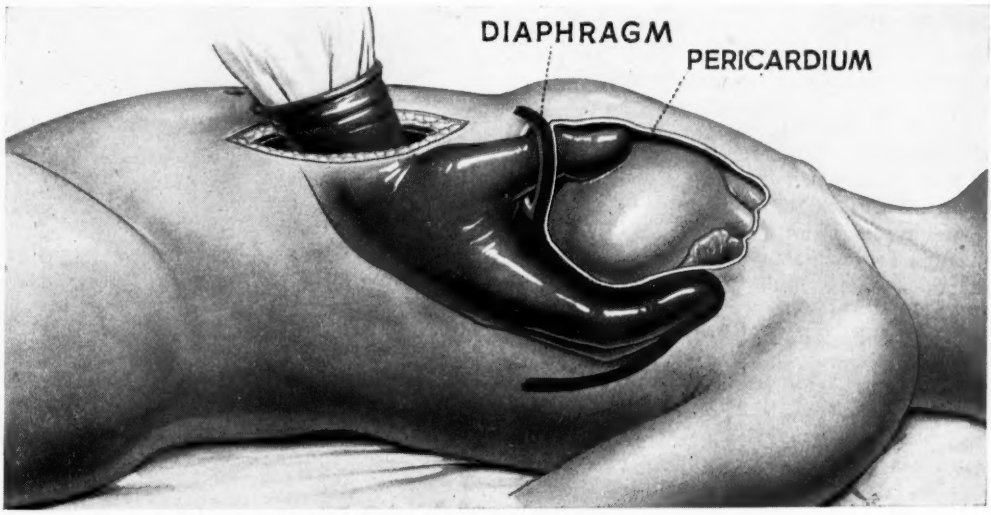

Fig. 3. Nicholson's method of performing cardiac massage.

When the patient has a deformed thorax or a rigid costal margin (usually such patients are elderly) and as a consequence the operator is not satisfied that he is compressing the ventricles effectively, or when no response to the standard method has been obtained after a minute or a minute and a half, Nicholson's[6] method (Fig. 3) should be adopted. Some surgeons employ Nicholson's method from the start, and their argument for so doing is well founded.

Nicholson's Method: A button-hole incision is made immediately behind the base of the xiphisternum between the attachment of the two sides of the diaphragm. The thumb of the right hand is thrust through the opening. The heart (within its pericardium) can then be compressed between the thumb above and the fingers beneath the diaphragm.

* * *

For more than 20 years I have endeavored to clarify what is the best procedure in cases of cardiac arrest. In former editions of my "Emergency Surgery" I set out a table: a timekeeper, artificial respiration, hot precordial packs, and intracardiac injection of adrenalin were scheduled in an orderly plan of action. In that plan (now obsolete) cardiac massage might be described as the last card.

From time to time I have questioned myself whether these instructions, which conformed to orthodox surgical teaching, were in the best interests of the patient. An analysis of published cases showed that cardiac massage had been relatively more successful when the catastrophe necessitating it had occurred during the course of an abdominal operation. It was reasonable to assume that, the abdomen being open, massage was resorted to sooner than would otherwise have been the case. In 1941 I recorded that I had performed cardiac massage about 40 times. In 13 cases the heart started beating in earnest; but too often, after giving hope for hours or days, disappointment was the outcome—only 5 patients survived. The following case caused me to revise the plan and to advocate earlier cardiac massage.

I had completed the operation of epididymectomy for tuberculosis on a boy aged 12. No anxiety had been experienced. I happened to look through the window of the changing-room, and saw the anesthetist performing artificial respiration. The child had white asphyxia, and we immediately put in operation the routine of having a timekeeper call out the passing minutes. At three-and-a-half minutes I injected adrenaline into the heart. At four-and-a-half minutes, after hastily scrubbing up, I opened the upper abdomen and performed cardiac massage. A full minute lapsed without any response. There was then one beat, a short interval, then three or four beats, and he commenced to breathe. By the time the abdomen had been closed with through-and-through sutures some color had returned to the patient's blanched face, the pulse was full, but very rapid, and oxygen was being administered. Next day the patient said he felt well.

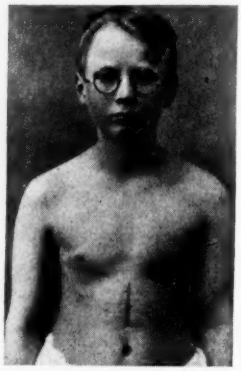

Fig. 4. Case described, six months after successful cardiac massage. Vision unimpaired.

On the third day the boy complained of dimness and double vision. On the fourth day he could distinguish only between light and darkness. There were other evidences of serious disturbance of the central nervous system, such as incoördination and some paresis. Obviously the vital centers had been left too long without a blood supply, and during the period of blindness I wondered whether it would not have been better if the cardiac massage had failed. It was during this period that I became determined to advocate earlier cardiac massage. By what I believe to be an unprecedented stroke of good fortune, the patient's vision gradually returned and all other untoward signs disappeared (Fig. 4). This patient was young, and it is reasonable to suppose that the unexpected restitution of function was attributable to his youth, for Swift Joly's [5] patient, a man of 55, resuscitated under similar circumstances, never fully recovered.

I want to make it perfectly clear that I have now abandoned expending time in performing artificial respiration and injecting adrenaline into the ventricle. It seems obvious that, if the heart has stopped, the sooner it is massaged the better. As a consequence of following this simple dictum I am able to record three consecutive successful cases of cardiac massage, an experience vastly different from that when cardiac massage was longer delayed.

Further, it appears that the early anxieties and later complications that follow temporary cardiac cessation are proportionate to the length of time the organ is functionless—an observation in keeping with rudimentary physiological principles and common sense. It may even be said that, with prophylactic chemotherapy now available, if a pa-

tient is in reasonably good condition before being anesthetized, and the time the heart is allowed to stand still is less than 1½ minutes, that patient will probably suffer neither harm nor even any inconvenience beyond that occasioned by an upper abdominal incision.

CURRENT PLAN OF ACTION

The anesthetist reports that he cannot feel the pulse. Is the heart beating? When the surgeon has access to a large artery such as the abdominal aorta or the common iliac artery, he can himself confirm or deny that the heart has

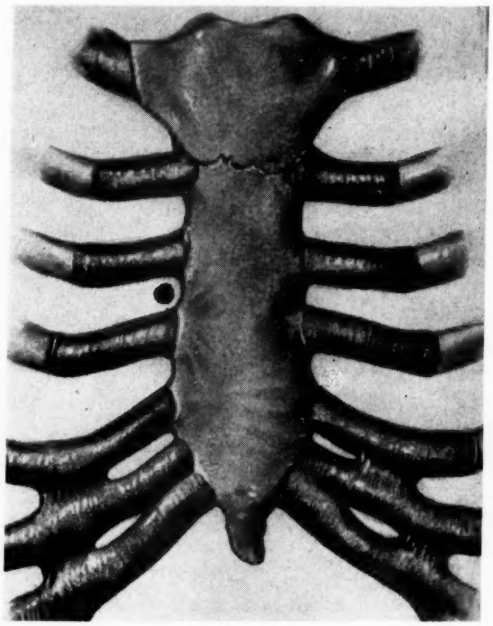

Fig. 5. Illustrating point at which auricle should be pricked.

ceased to beat. When such an artery is not available, it is the anesthetist who must settle this point by the means he thinks best; in my view the carotid pulse is the most reliable indicator. Three-quarters of a minute is available for obtaining this information. During this period the anesthetist verifies that the patient's airway is not obstructed. This being done, he breaks a capsule of amyl nitrite under the patient's nostrils. According to Primrose,[7] the exhibition of amyl nitrite is the means of distinguishing between cardiac depression and cardiac arrest. While these 45 seconds are fleeting, the surgeon is not idle; he and the theater sister or surgical nurse are sterilizing the precordial and epigastric areas, and arranging towels suitably.

Pricking the auricle. As soon as the precordial area has been sterilized, the right auricle should be pricked with a needle. The needle is thrust into the third right interspace at the upper rim of the fourth rib, close to the sternal border (Fig. 5), and is directed upwards (Hyman[8]). This can be accomplished in the twinkling of an eye.

Cardiac massage. Unless the response to the above stimulus is obvious and immediate, cardiac massage by the technic described above must be undertaken forthwith.

Posture. The head should be lowered by tilting the operating-table. "The cortex can be kept from death by the merest trickle of blood" (Sir Leonard Hill). The anesthetist can attend to this while cardiac massage is in progress.

Artificial respiration. Manifestly, artificial respiration is futile if the heart is not beating, but no harm is done in continuing automatic respiration with an anesthetic machine if the anesthetist has the facilities for doing this. Indeed such a measure is highly desirable; for, should the heart's action be re-established, not a second is lost in oxygenating the erstwhile stagnant blood in the lungs.

In some instances, almost as soon as the heart starts beating the patient breathes spontaneously. In others artificial respiration must be carried out sometimes for a long period.

Repairing the incision. It is inadvisable to close the midline incision until it is certain that the patient is breathing without artificial aid. If the surgeon has time on his hands, he can insert through-and through sutures without tying them (Fig. 6).

Sulfanilamide powder is poured into the wound, which is closed rapidly. It is sufficient to close the upper midline incision with strong, interrupted through-and-through sutures traversing all layers. If the button-hole incision in the diaphragm has been made, the suture of this opening is unnecessary.

Immediate after-care. As soon as convenient, the blood-pressure is taken; if it is under 100 mm. Hg, plasma infusion is given and a pressor drug administered.

More remote after-care. An important consideration in the after-care of the patient is that his lungs should be kept well ventilated by the intermittent administration of CO_2. Whenever possible, penicillin therapy should be started within the first few hours. These measures are designed to prevent pulmonary complications that are so likely to develop after trauma of the diaphragm.

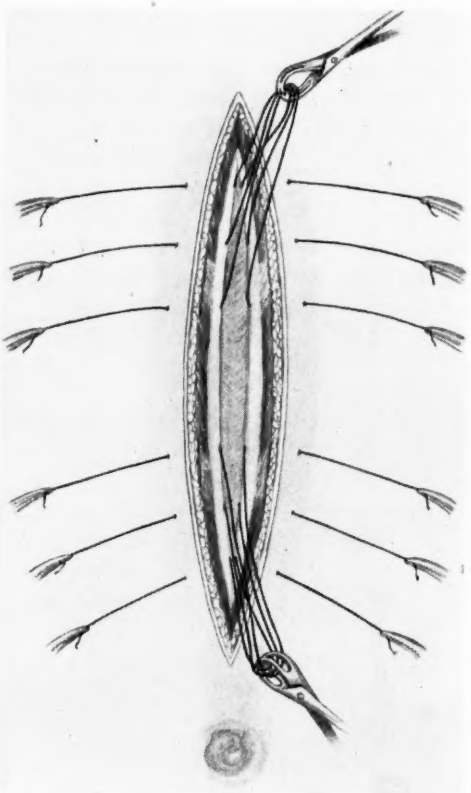

Fig. 6. Through and through sutures having been inserted, they can be gathered together as shown, and later tied in a few seconds.

SOME ENCOURAGEMENTS

How long should we persevere with cardiac massage? This is a question that has never been settled, but a lead is given from a case reported by Adams and Hand,[10] where cardiac massage was continued for no less than twenty minutes before a response was obtained. The patient recovered.

Perhaps the most stimulating case is that recorded by Easton,[11] who courageously performed cardiac massage by Nicholson's[6] method in circumstances which allowed only of using an unsterilized scalpel, with his hands unwashed. His patient was a woman, aged 25, whose heart stopped during chloroform anesthesia for childbirth. Several hours after this ordeal the patient had recovered sufficiently for a general anesthetic to be administered while her abdominal

wall was sutured. She recovered uneventfully.

MacLeod's[12] patient collapsed under spinal anesthesia. Though the heart responded to cardiac massage after two minutes, it was 45 minutes before respirations became automatic. Throughout this period the surgeon and the assistant took turns in carrying out artificial respiration and keeping a hand beneath the diaphragm.

Grimshaw's[13] patient was a woman, aged 61, whose heart stopped during the administration of pentothal. Cardiac massage performed about three minutes later led to complete recovery.

These reports prove that cardiac massage can bring back to life those whose hearts have ceased to beat while under any form of anesthesia.

BLUE ASPHYXIA

Concerning the possibilities of resuscitation in cases where the heart's action has ceased following blue asphyxia, little information is to be found in literature. I am sure that I have established conclusively that the time limit for successful cardiac massage in blue asphyxia is lengthened tremendously; this is in keeping with what we might expect from a theoretical consideration. In blue asphyxia the cerebral mechanism is not deprived of blood; indeed, it is congested, and because of this, the cerebral cells survive longer than if congestion were not present.

CARDIAC MASSAGE IN LATE BLUE ASPHYXIA

At 7:30 P.M., I was on my way to visit another patient when an agitated nurse ran out of a room saying, "He is very blue." I entered the room, and a man, aged 28, from whom I had removed the left submaxillary salivary gland for calculus about three-quarters of an hour previously, was lying quite still. His face was suffused and deeply cyanotic. I pulled his head and shoulders to the side of the bed, inserted a mouth gag which was on the table, put my right index finger down to the back of his throat, and attempted to perform artificial respiration by placing the base of my left hand over the xiphisternum. As soon as I had established an airway, I recall that I was surprised to see how effective was this method of getting some air in and out of the lungs. After about a dozen compressions he made one respiratory effort. This, the only sign of life, was not repeated. I had sent the nurse to fetch Sister and anyone else available. At last the nurse returned with the news that Sister was at dinner; she was accompanied by another nurse. I exhorted them to find someone. Possibly a minute later, Dr. Marre, a dermatologist, who had come to visit a patient, appeared. Dr. Marre performed artificial respiration while I swabbed out the pharynx.

After about two minutes we concluded that there were no signs of life, and I asked Dr. Marre to go to the theater and fetch a scalpel. This he did, and returned after what seemed to be a very long time, but afterwards we estimated it was five minutes (the theater was on another floor). During all this time I continued to perform artificial respiration. The scalpel was in a bowl of antiseptic; and, having rinsed my hand, which was lacerated by the patient's teeth, in running water, I dipped my hands in the antiseptic and then poured some on the patient's epigastrium.

Having incised in the middle line, I started cardiac massage from beneath the diaphragm, and, after about 1½ minutes there were, as I have experienced before, one or two beats followed by further cardiac cessation. Continuing the massage for some seconds, the heart sprang into activity, and, shortly afterwards, the patient began to breath naturally. Sulfanilamide powder and the instruments for sewing up the abdomen were sent for (by this time numerous helpers had arrived on the scene), and the abdomen was closed.

By 8:30 P.M., the patient was breathing well, the pulse-rate was about 120 and steady, the pupils were widely dilated and fixed, and the conjunctival reflex was absent. The face was still very suffused, and the purple tongue, which had been torn by my endeavor to draw it forward, continued to bleed; consequently the pharynx had to be swabbed out periodically. By midnight the pupils were smaller,

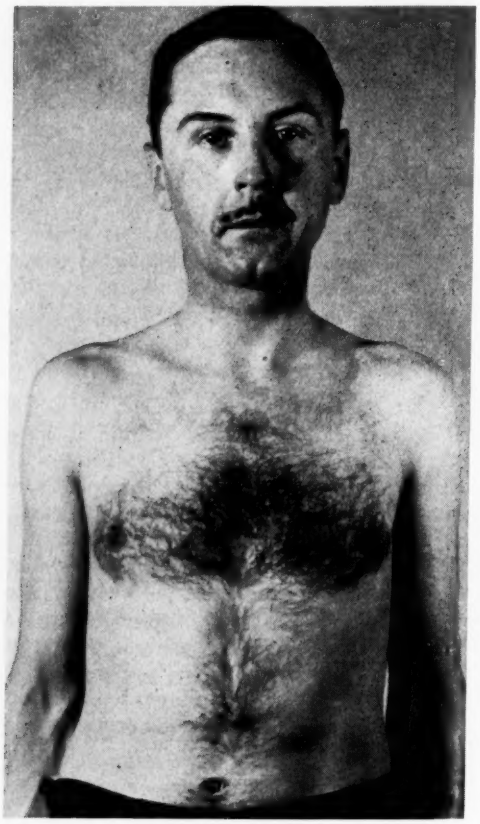

Fig. 7. Case described, two years after remarkable resuscitation. His heart was arrested for at least twelve minutes.

but the conjunctival reflexes were still absent. The patient became restless about 12:30 A.M. and periodic attacks of restlessness occurred during the night. At 4:30 A.M., he showed signs of cerebral irritation and had to be held in bed. One quarter grain of morphine was given. By 5 A.M. the pulse-rate was again down to 120, but at 8 A.M. extreme restlessness returned. Another 1/6th grain of morphine was administered. At 10:30 A.M., there was generalized sweating. The blood pressure was 116 systolic, 78 diastolic. The pupils were pin-point and equal, but there was no reaction to light. The limbs were somewhat spastic; and, what was profoundly disappointing, there was no sign of return of consciousness. However, 13½ hours after the cardiac massage, the patient began to swallow, and, from this time on, hope of a successful issue was entertained. He spoke to a nurse 17 hours after resuscitation.

He then continued to improve until the seventh day, when suddenly he experienced a very severe pain in the left side of the abdomen. This was correctly diagnosed (after difficulty) as diaphragmatic pleurisy. A left pleural effusion and later an empyema developed. The patient recovered (Fig. 7).

This case shows that in blue asphyxia the time limit for successful cardiac massage is tremendously lengthened. At the very least, the period of cardiac arrest in this case was 12 minutes; in all probability it was longer.

SUDDEN VASO-MOTOR COLLAPSE

Referring to those sudden cases of collapse where the pulse becomes almost imperceptible — crises where, to be of value, a pint or more of fluid must be put into circulation in the matter of minutes — it is my opinion that injection of fluid *by means of a syringe or syringes* into the bone-marrow is the method that has yet to be bettered. By means of a sternal-puncture trocar and cannula (Fig. 8) the bone-marrow can

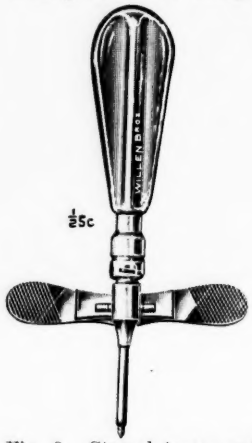

Fig. 8. Sternal trocar and cannula.

be entered with a swiftness and certainty that bedwarfs—nay, bepygmies—cannulization of a radicle of the venous system. I have employed this expedient with unbounded satisfaction in several desperate cases, of which the following is an instructive example:

A very difficult operation had just been concluded—the removal of a fibroneuromyxoma the size of a cricket or tennis ball from the posterior cord of the brachial plexus. In passing, attention is called to the marvelous access obtained by Fiolle and Delmas' incision to that deep, dark and dangerous recess behind the clavicle. After removal of this tumour, as the gap in the posterior cord of the brachial plexus was about 6 inches and the ends of the cord had been sutured together, it was considered necessary to put the arm in a shoulder spica plaster. It was while the plaster was being applied that the patient suddenly collapsed. The pulse was imperceptible. After an unfortunate delay in getting ready the apparatus for infusion, it was found that saline solution would not run into the left saphenous vein. The house-surgeon, therefore, cut down on to the right saphenous vein, but the saline solution gravitated at the rate of only about twenty drops a minute. So collapsed was the patient (a woman, aged 33) that it was useless to expect replenishment of the circulating fluid by this route. I therefore ordered a sternal-puncture trocar and cannula to be sterilized rapidly, and forthwith cannulized the *manubrium sterni*. By this time plasma was available, and a pint and a quarter was injected in less than 2 minutes (Fig. 9). After the patient, who appeared moribund, had received a pint of plasma, the anesthetist reported that the pulse was perceptible. It was not until she had received two pints of plasma via the bone-marrow that the cannula tied into the saphenous vein began to function adequately. By this time the patient was out of immediate danger.

Fig. 9. A pint of plasma or saline solution can be injected by the syringe method into the marrow of the sternum in less than two minutes.

* * *

Impending death under anesthesia is a subject of cardinal importance to every surgeon. Experience has taught me that cardiac arrest can occur in any patient, with any anesthetic agent, and with any anesthetist. For reasons that are obvious, a general emergency surgeon must expect to hear the beating of the wings of the angel of death more often than do surgeons engaged in special branches of our art. Even so, let him who thinketh he standeth take heed lest he fall from unpreparedness. To resolve to prick the auricle within three-quarters of a minute of ascertaining that the heart has ceased to beat; and, in the likely event of this expedient's being ineffective, forthwith to massage the heart, will, I am sure, recall some of those whom Charon has started to ferry across the waters of the Styx.

SOMMAIRE

L'auteur discute la technique du massage cardiaque dans les cas d'asphyxie blanche ou d'asphyxie bleue, àssociée à arrêt cardiaque, survenant durant le cours de l'anesthésie générale. Il considère cette méthode de ressuscitation comme la première, plutôt que la dernière, ressource. Se basant sur son expérience personnelle, il est d'avis que si on a recours au massage cardiaque dans le délai d'une minute ou d'une minute et demie après que le coeur a cessé de battre, les chances de survie son bien meilleures que si on retarde plus longtemps. It rapporte trois cas consécutifs dans lesquels on suivit ce dictum avec succès. L'auricule est ponctionné trois-quarts de minute après l'arrêt cardiaque. Si cela est sans effet, on aura immédiatement recours au massage cardiaque. Dans les cas d'asphyxie bleue, on a un peu plus de temps car dans ces cas le mécanisme cérébral n'est pas privé de sang. Dans un cas de cette nature, la periode d'arrêt cardiaque était au moins de douze minutes; néanmoins, il y eut réussite.

L'auteur discute aussi l'affaissement vaso-moteur soudain. Il recommande pour ces cas l'injection de fluide dans la moelle osseuse plutôt que par canalisation des veines. Son expérience personnelle avec l'emploi de la ponction du sternum par trocart et canule fui a donné des résultats très satisfaisants.

RESUMEN

El autor trata de la técnica del masaje cardiaco en los casos de asfixia lívida y pálida, con la concurrencia de interrupción cardíaca que suele ocurrir durante una anestesia general. Cree que este prodecimiento de resurreción debe ser un recurso inmediato, y no postrero. Por propia experiencia llega a la conclusión que el masaje cardíaco debe comenzarse dentro del minuto y medio que sigue a la cesación de latidos en el corazón. En este caso, las oportunidades de revivir la acción del corazón son mucho mejores. El autor registra tres casos consecutivos y con éxito en los cuales siguió el procedimiento mencionado. El aurículo es punzado dentro de los primeros 45 segundos después de la inmovilidad cardíaca, y si se prueba su inefectividad, se comienza el masaje cardíaco inmediatamente.

El tiempo necesario en los casos de asfixia lívida es mayor aún, puea en tales casos el mecanismo cerebral no ha sido desprovisto de sangre. En uno de los casos de que se informa, el período de cesación cardíca fué de 12 minutos y probablemente mayor aún. El resultado fué completamente feliz.

El Dr. Bailey también explica el colapso repentino del vasomotor, recomienda la inyección de flúido por medio

(Continued on page 27)

The Surgical Concept in Hyperthyroidism*

CHAS. GORDON HEYD, M.D., D.M.Sc., F.A.C.S., F.I.C.S. (Hon.) †
NEW YORK, N. Y.

THE rapid advance of biochemistry has contributed greatly to our knowledge of thyroid disease. The surgical mortality in operations for thyroid disability is surprisingly low. It is conceded that with the exception of cancer of the thyroid, operations for goiter imply no grave operative risk. The low mortality of thyroid surgery is somewhat surprising as the anatomical field is one in which surgical intervention is usually hazardous and fraught with danger. The standardization of technical procedures, the speedy control of hemorrhage, and the low incidence of pulmonary complications have contributed largely to the excellent immediate surgical results.

When we consider postoperative morbidity there is much to be desired in regard to better and more assured good health. Persistent hyperthyroidism, recurrent hyperthyroidism, regrowth of nodular or adenomatous goiters, and disabilities of the voice and breathing mechanism of the larynx are all too frequent and may be the cause of continued ill health or permanent invalidism.

Chemical studies have contributed greatly to our understanding of the fundamental problems of thyroid dysfunction — hyperthyroidism and hypothyroidism. Malignancy of the thyroid is found in almost uniform percentage in all goiter clinics and is basically associated with adenomatous or nodular goiters.

The fact that hyperthyroidism is not infrequently associated with diabetes and tuberculosis has introduced new problems. Chemical studies on the glycolysis of the liver in thyroxin stimulation have contributed knowledge on thyroid crises and liver exhaustion. The high percentage of hypoproteinemia in hyperthyroidism has resulted in a more adequate intravenous therapy for this condition.

More recently the introduction of thiouracil has opened a new chapter in therapeusis. It may be said that the field of the goiter surgeon has been enlarged by this new knowledge. Let us remember that thiouracil is the first of a group of chemical compounds that may have a decided place in the non-operative treatment of hyperthyroidism; we should also recall that the first sulfonamide was extremely dangerous, and that later, with the advance of chemistry and clinical experience, there were evolved the splendid "sulfa" compounds that we use today.

Thiouracil is a very dangerous drug and now that it is on the market it will be the cause of a number of deaths—twenty-seven deaths have already been reported following the use of this drug.[1] Its chief danger is the production of an agranulocytosis, which can and undoubt-

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* Read at the Eleventh National Assembly, United States Chapter, International College of Surgeons, Detroit, Michigan, October 22, 1946.

† Professor of Surgery, N. Y. Post-Graduate Medical School, Columbia University.

edly will cause some mortalities. Approximately 11 per cent of patients receiving a well-considered, safe dosage will show reactions in the following order: (1) skin reactions; (2) fever; (3) submaxillary swelling; (4) liver damage, and (5) agranulocytosis. These reactions may continue even on cessation of the drug and may occur as late as nine days after the drug has been discontinued. When thiouracil is employed, it should be administered under the direct personal observation of the prescribing physician. The danger of agranulocytosis may be lessened by making a complete blood count at least once a week; if there is a falling in the number of leukocytes, the drug should be stopped immediately and intravenous therapy initiated: (a) intravenous plasma or whole blood; (b) penicillin, 500,000 units a day, and (c) liver, both orally and parenterally.

We have used thiouracil in a dosage of 0.2 grams three times daily for three weeks and then 0.2 grams twice a day. While the patient is taking thiouracil a one point drop per day in the basal metabolic rate may be expected. Thiouracil, when well tolerated, will be of great assistance in the unusually complicated case of hyperthyroidism—the patient with a chronic hyperthyroidism, a high basal metabolism, auricular fibrillation, decompensation, or complications from diabetes or tuberculosis.

Various reports indicate that iodine may be used with thiouracil with great advantage to the patient and the surgeon. Since thiouracil produces hypervascularization and hyperplasia of the thyroid acinar cells, it causes an increase in the size of the goiter and an increase in bleeding at the time of operation. If thiouracil is used as part of the preoperative therapy, it should be combined with iodine for the last week or ten days before operation.[2] The effect of the iodine will be to diminish the size of the acinar cells, to lessen the hyperplasia, to increase the colloid material and to lessen the vascularity.

Since thiouracil increases vascularity and hyperplasia, one may question whether it is wise to employ thiouracil in the hyperthyroidism of adenoma. Cancer of the thyroid represents about 3 per cent of all thyroid surgery and approximately 97 per cent of cancers of the thyroid arise from or are associated with nodular or adenomatous goiter. Therefore, the giving of thiouracil to a patient with a hyperthyroidism of adenomata may perhaps initiate or activate an adenomatous metaplasia into a malignancy.

Recently, Chapman[3] made a significant communication on the treatment of hyperthyroidism with radioactive iodine. Normal thyroid tissue absorbs about 20 per cent of radioactive iodine, whereas in toxic diffuse goiter about 80 per cent is taken up. A number of patients were treated with from one to three doses of radioactive iodine with excellent results; in most instances the goiter disappeared.

Surgical intervention is indicated for two major types of hyperthyroidism: (1) diffuse toxic goiter (Graves' disease—exophthalmic goiter); (2) toxic adenomatous goiter (nodular goiter). In advising thyroid resection consideration is given to (a) the "heart age" of the patient, (b) the chronicity of the thyroidism, (c) the weight loss and (d) the response of the patient to preoperative therapy. For the last six years we have employed a uniformly standard technic in all thyroid operations. Its merits are apparent in the precision of technical procedures, hemostasis, exposure of the entire anatomical

field and in lessened complications and mortality.

Fortunately, operative complications in thyroid surgery are infrequent. If and when they do occur as the result of operative trauma they are due to: (a) inherent pathological change in the goiter over which the surgeon has very little control; (b) bleeding from the dangerous area in the region of the recurrent laryngeal nerve; (c) mass ligation of the superior pole with injury to the superior laryngeal nerve; (d) inadequate exposure of the anatomical field. Voice and breathing disabilities occur rather more frequently than is generally assumed.[4] The larynx performs three independent and essential functions for normal voice and respiration: of outstanding importance, the maintenance of a normal respiratory airway; second, the preservation of a normal inspiratory reflex; and finally, the conservation of a normal voice mechanism. For normal voice function all of the intrinsic muscles of the larynx must function in unison, with normal and uninjured nerve supply.

The disabilities of the voice and breathing in connection with thyroid surgery vary from slight to tragic. We may list them in order of severity somewhat as follows: (1) spasmodic episodes of painful coughing with no expectoration; (2) mucus retention with inability to clear the throat; (3) pain over the region of the molar teeth—the thyromandibular reflex—and the occasional earache; (4) the spasmodic spilling over of fluids into the larynx; (5) early fatigue and hoarseness in the normal voice; (6) changes in the pitch of the voice; (7) constant hoarseness; (8) the inspirational stridor; (9) the stridor and crooning noise during sleep; (10) the whispered voice at all times; (11) dyspnea on exertion; (12) dyspnea on the slightest exertion; and, (13) dyspnea at rest.

In order to protect the patient adequately at all times, we must surround him with every possible safeguard. To accomplish this, six essentials are required: (a) full and expert preoperative treatment, (b) a reverse Trendelenburg position on the operating table, (c) a safe, simple anesthesia—with or without intubation, (d) the absolute control of hemorrhage, (e) the complete exposure of the entire anatomical field, (f) expert postoperative treatment.

Safe, simple and adequate anesthesia is essential. It is desirable to have the patient brought to the operating room in a semisomnolent condition. The patient is given a cleansing enema the afternoon of the day before the operation, and about 9 p.m. the same day he is given nembutal, 1½ grains. The next morning, about one hour and fifteen minutes before the scheduled time of operation, a solution of paraldehyde in thin starch water is given by rectum—one cubic centimeter of paraldehyde per 10 pounds of body weight. If the patient is underweight (from 90 to 120 pounds) a minimum of 12 cc. of paraldehyde is given. If the patient is obese and heavy, a maximum of 16 cc. of paraldehyde is given. The paraldehyde is given in 150 cc. of thin starch water, prepared as follows: 1 tablespoonful of cornstarch to 1 pint of cold water; stir the water with starch and heat slowly, stirring until it comes to a full boil.[5]

One-half hour before operation and forty-five minutes after the paraldehyde solution has been introduced into the rectum, the patient is given a hypodermic of morphine sulfate, 1/6 grain, and scopolamine hydrobromide, 1/150 grain. The patient is usually asleep at

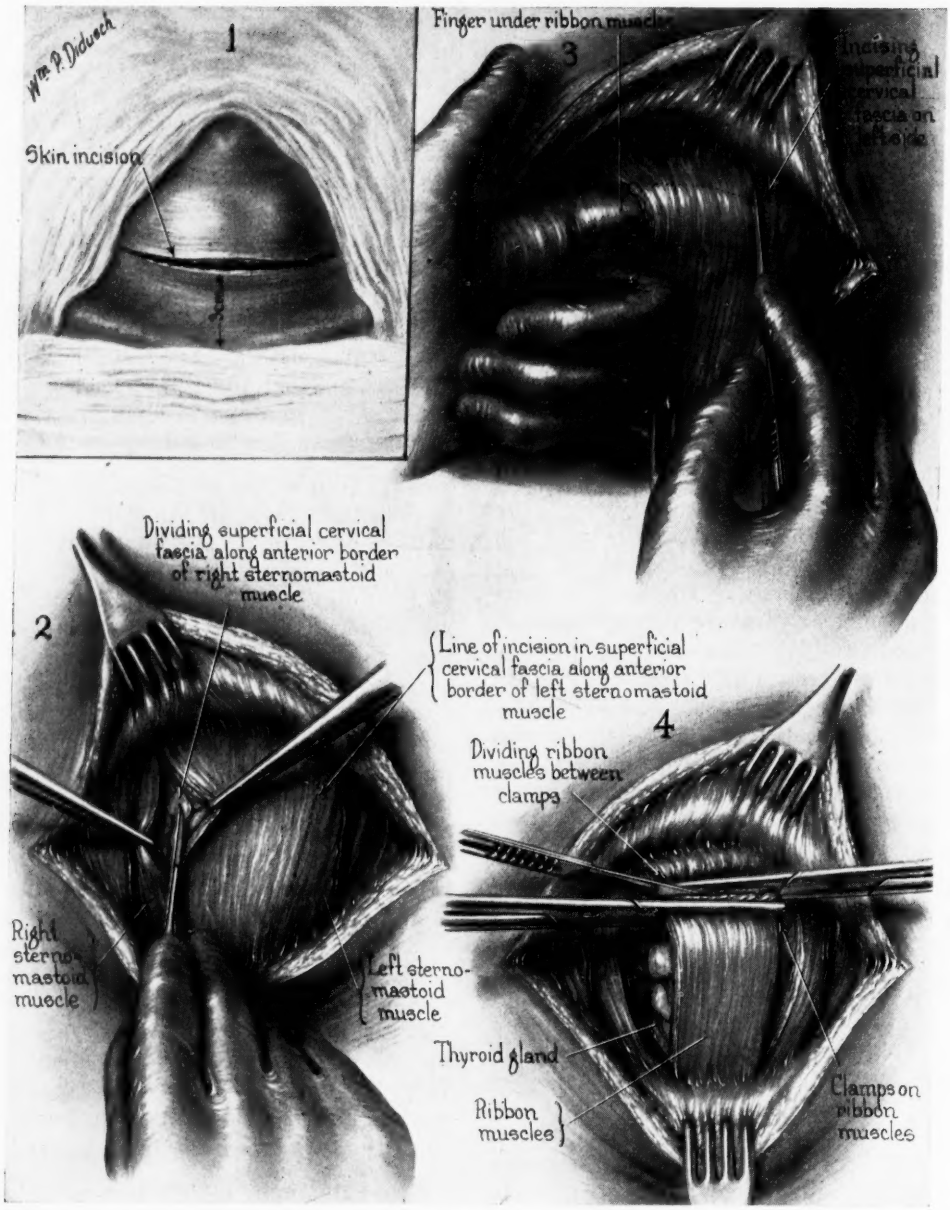
Wm. P. Didusch
1
Skin incision
Finger under ribbon muscles
3
Incising superficial cervical fascia on left side
Dividing superficial cervical fascia along anterior border of right sternomastoid muscle
2
Line of incision in superficial cervical fascia along anterior border of left sternomastoid muscle
4
Dividing ribbon muscles between clamps
Right sternomastoid muscle
Left sternomastoid muscle
Thyroid gland
Ribbon muscles
Clamps on ribbon muscles

PLATE I

the time of arrival in the operating room. The sleep is not deep, for the patient may be aroused by being spoken to or by changing his position on the operating table. Ordinarily the patient has no recollection of the trip to the operating room nor of the operation. By this somnolence the preoperative

tachycardia produced by tension and the trip to the operating room, etc., is avoided. After the patient is placed in position on the operating table, ethylene-gas anesthesia is induced.

The usual procedure for exposing the thyroid gland is to incise the cervical fascia in the median line and then to divide the ribbon muscles on either side by applying two crushing clamps at approximately the upper third. When this procedure is completed, it is possible by traction upward and downward of the divided muscle groups, together with lateral traction, to obtain a fairly good but incomplete exposure of either side. However, on many occasions this procedure does not give a good approach to the operative field, and if bleeding occurs it may be extremely difficult to locate or to control without injury to important structures.

In the course of our experience we began to simplify this bilateral procedure by dividing both lateral groups of ribbon muscles—right and left—between two clamps, thus giving a larger and more ample exposure and leaving the operative field less encumbered, with two clamps instead of four. In addition, the goiter and thyroid gland may be seen in their entirety.[5, 6]

The skin incision is placed at least three centimeters above the sternal notch. (Plate I, Fig. 1.) It is our custom, before beginning the skin incision, to "saw" rapidly with a thread across the greatest anterior protrusion of the thyroid and to make the skin incision either above, through, or below the "red line" made by the thread, depending on the general shape, size, and asymmetry of the goiter. The incision is carried down to but not through the platysma, and the upper and lower flaps are developed. The lower flap is first undermined to a depth of about one to two centimeters; the upper flap, however, is dissected upward for a considerable distance, at least above the thyroid promontory. Hemostasis is completed before any further operative procedure is carried out. The superficial cervical fascia is divided along the anterior border of the right sternomastoid muscle for a distance of seven to ten centimeters. (Plate I, Fig. 2.) A Parker retractor is inserted and by lateral traction the right sternomastoid muscle is displaced laterally, exposing the pretracheal fascia which extends from the carotid sheath to the midline. This pretracheal fascia is incised in the same longitudinal direction. The right lateral border of the pretracheal muscles is elevated and the index finger is insinuated below the three ribbon muscles and carried across the midline to the anterior border of the left sternomastoid muscle, where a similar incision is made through the pretracheal fascia as on the right side. (Plate I, Fig. 3.) The muscles are raised off the isthmus of the thyroid and two Kocher clamps are applied as follows: the first assistant, standing on the patient's left side and opposite the operator, inserts the upper Kocher clamp from the patient's left to right side and the operator inserts the lower Kocher clamp from the patient's right to left side; the handles of the Kocher clamps are thus placed one on each side of the patient and the two clamps are applied at approximately the junction of the upper and middle third of the muscle group. The muscles are then divided and, with a hook retractor placed under each clamp, traction is made upward and downward, and the entire thyroid area is fully exposed. (Plate I, Fig. 4.)

By these procedures a complete exposure is made of the entire thyroid

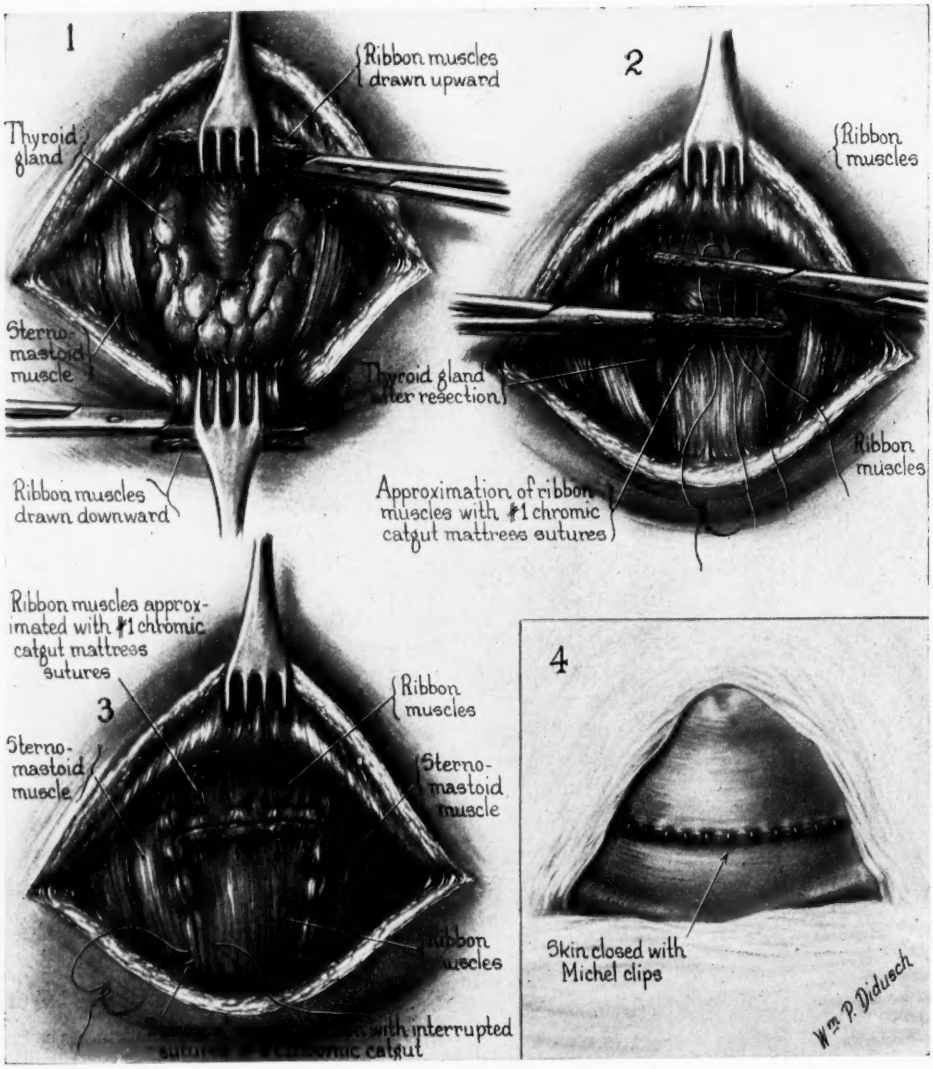

PLATE II

area. The surgeon may now continue with the resection of the thyroid according to his own practice and experience.

In the resection of the thyroid gland four procedures are of great technical value: (1) the clamping and division of the lateral thyroid vein; (2) the mobilization and division of the superior pole; (3) the undermining and division of the isthmus in the median line, and (4) the recognition of the inferior thyroid artery and its division close to or within the substance of the gland. (Plate II, Fig. 1.) After the exposure has been made as outlined, the resection is started by grasping, with Kocher goiter clamps,

the anterior surface of the right lobe of the thyroid a few centimeters below the superior pole. By slight traction upward and toward the median line the right lobe is lifted out of its bed. By blunt dissection the lateral vein comes into view. This vessel is clamped and ligated. The division of the lateral vein allows a considerable degree of mobilization of the lobe in an anteroposterior direction. The next step is to ligate and divide the superior pole. As the superior thyroid artery and veins come from above downward and rest on the superior pole, it is very easy to enucleate the superior pole from behind the vessels and by so doing to leave the artery and veins clear and free from thyroid tissue. This maneuver brings the superior thyroid vessels into prominence and allows their being ligated at the beginning of the resection, without any danger of including the superior laryngeal nerve in the ligature. With the superior pole and the lateral vein divided, the lobe is freely movable except for the isthmus. The isthmus is undermined in the median line and divided. The lobe, freed from its isthmal attachment, is now freely movable except for the inferior thyroid vessels. The inferior thyroid artery enters the gland in a transverse direction at about the junction of the middle and lower third of the gland. By blunt dissection, the inferior thyroid artery is exposed and isolated, and ligated separately just as it enters the thyroid tissue. The recurrent laryngeal nerve is always in some anatomic juxtaposition to the inferior thyroid artery and by separation, isolation and ligation of the artery in thyroid tissue the nerve is uninjured and usually exposed. The edge of the posterior capsule with a remnant of thyroid tissue is approximated to the tracheal tissue by interrupted sutures of No. 0 plain catgut. Hemostasis must be complete and absolute before resection of the other side is attempted or the wound is closed.

At the termination of the resection of the thyroid the retractors are removed and the muscle groups approximated and united by three or four interrupted mattress sutures of No. 1 chromic catgut. (Plate II, Figs 2 and 3.) The closure of the wound is practically an anatomic reconstruction in the natural plane of musculature and the skin is closed by Michel clips. (Plate II, Fig. 4.) One-half, or every other one, of the Michel clips is removed at the end of forty-eight hours and at the point of removal of the Michel clip a small strip of sterile adhesive plaster, one inch in length and ¼ inch in width, is placed over the skin edge to splint the wound. All the Michel clips are removed by the end of seventy-two hours.

Finally, we present 230 consecutive cases of thyroid resection in which we followed the technic above described with no mortality.

	Cases	Mortality
Graves' disease	92	0
Toxic adenoma	53	0
Non-toxic adenoma	85	0
	230	0

SUMMARY

From his wide experience, the author discusses non-operative and preoperative therapy in hyperthyroidism, indications for surgical intervention, and his own technic for resection of the thyroid gland, particularly his simplified method of exposing the gland and goiter for resection. This technic is fully described and illustrated, and has been employed by the author in 230 consecutive cases without mortality.

(Continued on page 41)

The Reconditioning of Spinal Cord Injuries*

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AND
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THE desire and necessity for reconditioning the casualties of the war just ended have created a unique attitude toward their disabilities; and instead of the patients who cannot speak, cannot hear, cannot see, cannot walk being considered as total losses to themselves and their community, such disabling results of combat present a distinct challenge. In investigating all the attempts to overcome such handicaps in previous years, a definite program was planned for the service personnel and carried out by the Medical Departments of the Army, Navy and Air Corps. The information from the Rehabilitation Centers of Great Britain and such civilian projects as that being carried out by The Institute for the Crippled and Disabled was of value in planning and carrying out the reconditioning of spinal cord injuries. It was found that the best results were obtained by coordinating the efforts of the different medical specialties, in determining what was needed in the way of surgical repair requiring the skill of the orthopedist, general surgeon, plastic surgeon, neurologic surgeon, and in the re-education and training requiring the teaching of the physical trainer, the psychologist, the psychiatrist, the speech teacher and the physical therapist.

Brigadier General F. W. Rankin has stated that the results in the care and retraining of patients suffering from spinal cord injuries will remain one of the most important contributions in the field of rehabilitation of casualties from this or any other war. Donald Munro of Boston, who has been one of the great contributors to our knowledge of this problem relating to civilian casualties, stated in a recent article: "If he has been properly treated, every patient with a spinal cord or cauda equina injury who is intelligent and co-operative and has the use of the shoulder, arm and hand muscles can be made ambulatory; can have such control of the bladder and bowels as to sleep through the night without either getting up or wetting himself; can carry out ordinary activities throughout the day without soiling himself with feces or having to evacuate his bladder oftener than once every three hours; can lead a normal social life and, within the limits of his intellectual capacity, can earn a satisfactory living. Such patients can start walking with healed pressure sores and bedsores and, except for a small group, without the need for an inlying catheter or any substitute therefor; they have to use crutches and to wear, when ambulatory, caliper walking splints which, however, permit them to stand or sit. These are the only restrictions to their

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† The opinions or assertions contained herein are the private ones of the writers, and are not to be construed as official or as reflecting the views of the Navy Department or the Naval Service at large.

living the same social life and having the same earning capacity that they had before becoming paralyzed."

One of the important lessons learned from handling the countless casualties was that rehabilitation or reconditioning really started with the first treatment after being wounded, and this was particularly true with the spinal cord injuries. The moment a patient sustains a broken neck or back or any spinal cord injury resulting in paralysis of the lower extremities, several constitutional factors complicate any therapeutic effort. Disabling bed and pressure sores will develop if care is not exercised. Urinary infection, dribbling or retained urine due to a paralyzed bladder will cause wet bed clothes. A paralyzed anal sphincter will cause soiling of the bed by feces. Anemia, hypoproteinemia and cachexia may result from inadequate diet, disturbed emotional reaction and possibly "spinal shock" for the first few months after injury.

The immediate care of the patient with spinal cord injuries, of course, comprises transportation to the nearest hospital. Any patient with suspected spinal cord lesion should be carefully rolled onto a stretcher, attempting to prevent any movements which might increase the damage to the spinal cord. Roentgenographic examination of the vertebral column is necessary to determine the bony damage or displacement. However, before any extensive examination is carried out, the associated shock must be overcome. This is done by application of heat and the administration of blood and stimulants. All too frequently a patient is taken to the x-ray examining room before determining the extent of the shock and, as in all emergency cases, the immediate care of the patient is more important than the diagnosis. As soon as the patient has recovered from shock a complete examination is carried out. This comprises a careful neurological examination to determine the extent of the motor and sensory dysfunction. If there are evidences of spinal cord compression in the roentgenograms and a complete transverse lesion of the cord with an absence of motion and sensation of the lower limbs, then a spinal puncture with manometric studies should be performed. A subarachnoid block shows further compression of the cord and indicates an operation. There are some exceptions to this however. Fracture dislocations in the cervical region should be reduced by means of extension with a head harness or traction tongs, and some authorities attempt to reduce fractures in the thoracic and lumbar regions by hyperextension and the application of casts.

Operation upon the spinal cord when the fracture has occurred in the cervical region should be delayed until attempts at extension have been tried. Quite frequently complete reduction can be accomplished and recovery from paralysis be noted within a few days to a week. Should no return of function occur following reduction, then the supposition is that the spinal cord has been irreparably damaged. Surgery is delayed in cervical spinal cord injuries until traction has been attempted, when it may be used to relieve the pressure.

Injuries to the thoracic spinal cord are not so common and usually there is sufficient dislocation of the vertebrae to account for the transverse myelitis. Here again the criteria for operation consist of the amount of dislocation, the results of attempted reduction and the evidence of existing pressure upon the spinal cord by means of the mano-

metric or Queckenstedt test. Experience has shown that in very few cases can surgery improve the condition of the patient, for usually there has occurred irreparable damage to the spinal cord.

In the lumbar and sacral regions of the spine the operative results are better than in any other region due to the fact that here we are dealing not with a solid spinal cord but with the individual fibers of the cauda equina, which can be sutured like peripheral nerves.

Thus the surgical problems can be solved in the early stages of reconditioning. Among the casualties immediate surgery was delayed until transportation to a hospital was available. Then the decision as to surgery was determined by the condition of the patient, the nature of the wound, the situation of the wound, and whether or not pressure upon the spine was being caused by bullets, shell or bone fragments.

As soon as the patient is received in the hospital the treatment should be initiated. The patient should be turned every two hours to prevent pressure sores. The bladder should receive immediate attention as voluntary voiding ceases and retention begins immediately. Suprapubic stab wounds and subsequent introduction of drainage tubes were used in the war zone to facilitate transportation. Perineal drainage was also used, as was the inlying catheter; and there were a few attempts in transportation of patients with tidal drainage. Munro has emphasized the need for instituting tidal drainage immediately in civilian spinal cord injuries and stresses the point that this type of bladder care prevents retention, reduces the incidence of bladder infection and keeps the paralyzed bladder distended.

Thompson in discussing the subject states that the urologic care of patients with cord bladder is only part of the management of such cases. The cooperation of the neuro-surgeon, orthopedist, physiotherapist, urologist, physical training officer, nurses, hospital corpsmen and assistants is of paramount importance in the reconditioning of all cases of spinal cord injury, whether resulting from penetrating wounds or simple broken backs or necks. If the program for treating such cases continues, there will be few veterans of this war who remain so incapacitated as to be classified as invalids.

The proper treatment for spinal cord injuries consists of neuro-surgical procedures to relieve pressure on the spinal cord and to relieve pain and incapacitating spasticity; orthopedic corrective and stabilizing measures; skilled physiotherapy to strengthen muscles, bones and joints; urologic operations which restore voluntary bladder control; urologic examinations for stones and infections; and finally a reconditioning program which overcomes psychic damage. Plastic operations on bedsores, nutritional studies and a balanced diet are also important in this program.

Thompson stresses the importance of the physical training officer and the physiotherapist from the urologic standpoint. Hypercalcinuria can be reversed and calculus formation avoided by early attention to exercise of the unparalyzed muscles and bony structures of the upper half of the body. He says that at first these patients lie immobile, apathetic and disinterested, and the urine is thick with calcium debris. As weeks go on they become interested in efforts to correct their inactivity, and with encouragement they quickly develop great strength in their arms and

shoulders and abdominal muscles. The improved abdominal muscle tone simplifies care of the bowel, for it aids greatly in expulsion of enemas which must be given regularly. Most striking of all is the effect of exercise on calcium metabolism; the bones become normal, hypercalcinuria ceases, and the urine becomes acid and finally is free from abnormal debris. Excess excretion of calcium in the urine can be prevented only by this attention to exercise.

Partial transections of the spinal cord may be attended with little or no involvement of the bladder, however, in the majority of the cases; the care of the bladder is one of the most important phases in reconditioning. Where paralysis is extensive, urination is impossible and remains so for many months. The distended bladder must be emptied, and on the proper methods of doing so depends the life of the patient; otherwise, urinary sepsis, renal failure, uremia and death will result. In the early phase of the paralysis the bladder can in some cases be emptied by manual pressure applied to the suprapubic region. As time goes on, however, it is usually found that more and more pressure must be applied and that the bladder cannot be completely emptied. Finally infection will develop. Infection follows stasis no matter where in the urinary tract it occurs. The majority of paralyzed patients require drainage of the bladder through a catheter placed suprapubically through a stab wound, through a boutonniere incision in the perineal portion of the urethra or through the penis. No matter where placed, the catheter cannot be neglected and must be irrigated regularly and changed at regular intervals.

After a lapse of weeks or months when the catheter is removed, the patient develops what is loosely called an "automatic bladder" in which condition he can void at irregular intervals but is usually incontinent to some degree and must wear a urinal at all times.

Munro maintains that to overcome this difficulty, tidal drainage is the most efficient and satisfactory method of treatment. This method, as well as many modifications of his original procedure, has been described. Suffice it to say that through an indwelling catheter in the penile urethra continuous irrigation is carried out and at regular intervals the bladder is completely filled and emptied. In this way the bladder can be trained to empty itself and some of these patients can return to a normal mode of living during the day, continuing with the tidal drainage at night and remaining free from infection.

Thompson has been able to restore bladder function to the point where hospitalization can be eliminated, by means of drainage with the indwelling catheter and a properly performed transurethral resection of the vesical neck. Neurologists and physiologists have heretofore viewed the mechanism of urination in these disabled patients strictly from the nerve or muscle standpoint and have overlooked the mechanical aspects. Transurethral resection of the vesical neck does not cure the nerve lesion; neither does it restore the bladder musculature to normal, but it does enable the patient to urinate and to be continent.

He reports cases studied and treated at the National Naval Medical Center, in which this procedure has been carried out successfully. One of the most spectacular results of this method of treating the bladder was the great lift

in morale which the patients received; with the more intelligent of their patients, the thought of being tied to a catheter the rest of their lives was worse than being paralyzed.

The care of the bowel is of equal importance, as there is a definte paralysis of the sphincter resulting in either incontinence or a tendency to form fecal impactions. Until the bowel makes the adjustment, a diet high in caloric and vitamin content and low in residue should be given. This should be continued at least for a few weeks, while enemas should be given at definite intervals, in an attempt to train the bowel to regular evacuations and thus eliminate involuntary defecation.

There is an interval after every spinal cord injury when a period of observation is necessary to evaluate the amount of permanent damage. In working with casualties it was found that exercises in bed improved their physical condition. Every patient with a spinal cord injury must be convinced that regardless of the extent of his injury he will be able to walk, to move about in a wheel chair and to become independent of a bad existence. A definite lift in his morale is accomplished if this attitude towards his disability is maintained by every one who treats him. It was noticeable in the wards of the service-connected hospitals that these cases were brought in with depressed spirits, listless and uncooperative in eating or in entering into the ward activities. After a few days of observing the others walking down the ward on crutches, wheeling to the bathroom, putting on and taking off the braces, a definite interest occurred and soon they were asking about the physical program which would allow them to do as the others did. The example of others was of more use in the program than all the talking, urging and persuading of the doctors, nurses, social workers or others engaged in their care.

Once their interest had been aroused, they exercised, developed an appetite and co-operated in the care of their bladder and bowels. Munro has shown that pressure sores and bed sores are likely to occur in the cases in which a balanced diet has not been maintained due to a tendency in all these cases to develop an hypoproteinemia; and if the protein balance is maintained, the skin is not so inclined to break down. He emphasizes the turning of the patient in bed and the administration of proteins in preventing these disabling open lesions on the back and hips.

Occasionally these pressure sores occur in spite of all the preventive precautions and remain very resistant to treatment. Plastic operations have been successful with the use of the sulfones and penicillin. When the lesion is small, the ulcerated area can be excised and the skin edges undercut and approximated with tension sutures, as mentioned by White, Hudson, and Kennard. Skin flaps from the adjacent areas can be swung over the area, or split thickness grafts can be applied after the granulating area has been prepared and has become healthy and sterile. These procedures assist in the early healing of these lesions and speed the program of getting the patient into a wheel chair and started on his walking project.

In the meantime the physical therapist can be busy, attempting to prevent stiffening of the joints and maintaining flexibility of the muscles and tendons.

Orthopedic reconstruction operations are rarely necessary in the treatment of traumatic paraplegia. In some instances

the spine has been so weakened by the injury or by the removal of bone at the time of neurological exploration that spine fusion is indicated. In carefully selected cases spine fusion will strengthen the back so as to allow the patient to discard back braces and leather jackets and to sit and stand without additional support for the back.

Occasionally a neglected case of paraplegia will develop flexion contractures of the hips, knees and ankles which need to be corrected before the patient can be fitted to braces and be made ambulatory. As a rule, however, those patients with complete paralysis of both legs require no orthopedic operation. Patients with partial paraplegia and only partial loss of motor power in the legs may often be benefited by suitable reconstruction operations. These are usually in the nature of bony stabilizations or tendon transplantations or a combination of both. By carefully planned surgery it is often possible to improve function greatly in the extremity, and in some instances the operations will allow the patient to discard his brace.

In flaccid paralysis there is little difficulty in keeping the muscles and tendons flexible and the joints free from fixation, but in the cases where a spastic paralysis is present, and especially where there are mass reflexes with legs drawn and maintained in the position of flexion and adduction, the problem is more difficult. Again Munro, who has reported a number of successful attempts in treating this type of complication, and the Army and Navy hospitals, where similar procedures have been carried out, present what seems an adequate solution to the problem. As soon as it is established that no other type of conservative treatment will overcome the flexion deformity, a laminectomy is done and the motor components of the spinal nerves on both sides from the tenth dorsal to the second sacral are divided intradurally. This immediately relieves the spasticity and produces a flaccid paralysis, and also allows the application of caliper splints in the training for walking. These caliper splints have lock knee joints which may be unlocked to allow knee flexion when the patient is sitting. The majority of paraplegic patients with complete paralysis of the legs require long (foot to groin) caliper braces.

Before the splints are applied, however, the patient should be trained to shift his body about on the bed and then into the wheel chair, for in so doing he learns to balance himself and then can learn to apply the splints and swing himself over the side of the bed to stand upright. This is a difficult lesson for the patient to learn, but it is very important. Balancing on crutches is a difficult feat and is facilitated by a definite program to develop the muscles in the upper extremities which are to bear the brunt of supporting the body on crutches. Much patience is needed by the physical therapist or physical trainer in carrying out the final step in this reconditioning program, for the actual getting about on crutches is the objective of the program. This will take a great deal of time and will need a great deal of encouragement, not only from the doctors, but also from the other patients who have gone through it or are going through the same stages. This is where a grim determination on the part of the patient is of tremendous help and is necessary if the objective is to be reached.

From the standpoint of physical therapy, patients who are to be reconditioned are studied to determine the

presence or absence of spasticity or mass movement, because the approach is entirely different from those who have a flaccid paralysis. It is then important to determine the amount of strength which can be expected from physical conditioning of the muscles, of the arms, of the back and of the abdomen. It is well known that strength returns more quickly to the muscles of younger persons than to those of middle age or older. It is also known that men are likely to develop muscular strength more rapidly than women. The type of person, the physique, and the work in which the patient has been engaged previously may be the deciding factors. The heavily muscled person, accustomed to heavy labor, will do better than one who has never been engaged in strenuous labor. The mental attitude of the patient is important in view of the fact that he must have a desire to be helped and a determination to walk.

Strengthening of arm, hand and shoulder muscles may enable a patient to assist in hoisting himself out of bed to a wheel chair and back again, to push the wheel chair around, and to get onto the toilet stool from the wheel chair with little help. It has been found in dealing with these patients that those who have good muscles in the arms, shoulders and back, even though the abdominal muscles and all the leg muscles are paralyzed, can be taught to walk fairly well with the use of crutches and braces.

RECONDITIONING EXERCISE PROGRAM

After evaluation of the patient's possibilities, according to Elkins, a program should be outlined carefully. Reconditioning exercises which will develop strength in normal muscles and teach the patient to handle himself are given first in all cases. These simple exercises are used at first for a few moments twice a day. This period is increased gradually to two to five hours a day, and the strenuousness of the exercise is also gradually increased.

First, patients are taught to roll from side to side. Then arm strengthening exercises are given. Exercises against resistance by means of weights on pulleys and stall bars are employed. When sufficient strength has been recovered, the patient attempts to raise his trunk from a prone position to a crawling position and then to crawl by shrugging the hips forward in order to develop the lateral abdominal and quadratus lumborum muscles. These muscles are necessary for walking. Crutches which are shortened to almost one-half length are then used by the patient while he is in a sitting position with the legs extended on a mat. He is taught to raise the weight of the trunk with his arms and to shrug the hips and to push the legs forward and backward. This training accustoms the patient to crutches and teaches him how to place them and how to turn on them without danger of falling. Exercises to strengthen the back consist mainly of hyperextension. Exercise on parallel bars is excellent for increasing the strength of the back and arms.

When the patient regains sufficient strength to raise himself to a high stool, practice in getting in and out of a wheel chair is begun. As soon as the patient is able to raise most of his body weight by the use of his arms, braces are obtained for the lower extremities. The long-legged, locked knee brace is the type used in most instances.

After fitting the braces, the patient begins to practice on parallel bars or in a walker. As soon as he is proficient in walking with these, he then is trans-

ferred to crutches and is taught the four count gait and later the swinging-through gait. The four count gait means moving one crutch and the opposite foot. This is a slow gait, but it is the most stable for the severely handicapped. The swinging-through gait is much more rapid but more difficult to learn.

When the patient has accomplished a safe crutch gait, he is taught to fall, to get up from the mat using crutches only and to climb stairs and curbs.

It must be understood that any reconditioning of a patient who has been confined to bed to the extent that he can walk across streets requires hours of hard work and patience on the part of those entrusted with the training involved. It also includes hours of hard work and fortitude on the part of the patient. Those treating him must have special knowledge of the function of muscles and exercise. The patient cannot be handed a pair of crutches and braces and be told to walk. Neither is it possible to instruct the patient's family in two or three hours and expect them to accomplish much at home. The total time required to make these patients relatively more independent is not too great after their physical condition reaches the stage at which training can be started. The average patient can be walking fairly well at the end of eight weeks. He can be under treatment in the department of physical therapy in approximately eleven weeks.

In all these cases it must be remembered also that if progress is not made at the end of three to four weeks, the treatment should be discontinued, as either the patient is not interested or there is some other factor interfering with the successful outcome of physical therapy.

SUMMARY

The authors are in a position to report authoritatively on the great advance made during the war years in treatment and reconditioning of spinal cord injuries. In discussing the treatment necessary to enable these patients to lead relatively normal lives, they stress the necessity for co-ordination of the specialties—orthopedic, general and plastic surgery, psychology, psychiatry, physical therapy and speech training.

The importance of immediate treatment because of the various difficult conditions that arise automatically from such injuries is emphasized, and the steps in treatment are summarized as follows: neurosurgical procedures to relieve pressure on the spinal cord and to relieve pain and incapacitating spasticity; orthopedic corrective and stabilizing measures; skilled physiotherapy to strengthen muscles, bones and joints; urologic operations to restore voluntary bladder control; urologic examinations for stones and infections; plastic operations on bedsores; close attention to diet and nutrition; and, finally, a reconditioning program to overcome psychic damage. Differences in treatment of flaccid and spastic paralyses are pointed out. The authors particularly stress that the eventual success of any such program of reconditioning requires special knowledge, skill, and long hours of hard work on the part of those treating the patient, as well as a grim determination on the part of the patient himself to become as self-sufficient as possible.

SOMMAIRE

Les auteurs nous affirment avec autorité qu'il a été accomplis durant les anneés de guerre de grands progrès dans le traitement et dans les résultats obtenus dans les traumatismes de la

moelle épinière. Afin de donner le traitement nécessaire à ces malades, on doit avoir recours à la coopération des spécialties suivantes: orthopédie, chirurgie générale et plastique, psychologie, psychiatrie, thérapie physique et specialiste de parole. Il est de grande importance de soigner immédiatement les conditions difficiles qui surviennent automatiquement chez ces blessés.

On procédera ainsi: traitement neurochirurgicale pour rémédier à la pression exercée sur la moelle épinière et pour soulager la douleur et la spasticité; procédés orthopédiques pour corriger et stabiliser; physiotherapie pour fortifier les muscles, les os et les articulations; opérations urologiques pour restaurer le contrôle volontaire de la vessie urinarie; examens urologiques pour calculs et infections; opérations plastiques pour ulcus decubitus; diète soignée; programme pour surmonter le dommage psychique.

Les différences entre le traitement des paralysies spastiques et celui des paralysies flaccides sont discutées. Pour réussir, il est nécessaire de posséder des connaissances spéciales et d'être prêt à consacrer de longues heures de travail de la part de ceux qui soignent le malade et de détermination de la part du malade de recouvrer dans la mesure du possible le maximum de résultats.

RESUMEN

Los autores se hallan en condiciones de informar, con toda autoridad, sobre el gran avance experimentado por el tratamiento y reacondicionamiento de las heridas en la médula espinal en el transcurso de la guerra. Al hablar sobre el tratamiento necesario que ha de capacitar a los enfermos para llevar una vida relativamente normal, plantean la necesidad de co-ordinar diversas especialidades, tales como la ortopedia, cirugía general y plástica, psicología, psiquiatría, terapéutica física y entrenamiento oral.

Se pone de relieve la importancia de un tratamiento inmediato debido a las condiciones que automáticamente sobrevienen de dichas lesiones, y se sumarizan, como sigue, los pasos necesarios del tratamiento: (1) Procedimientos neoroquirúrgicos para aliviar la presión sobre la médula espinal y aliviar el dolor y la incapacidad espasmódica; (2) Ortopedia correctiva y medidas de estabilización; (3) Práctica fisioterápica para fortalecer los músculos, huesos y articulaciones; (4) Operaciones urológicas para restaurar el control voluntario sobre la vejiga; (5) Exámenes urológicos para buscar piedras e infecciones; (6) Operaciones plásticas de las llagas producidas por la permanencia en la cama; (7) Estricta atención sobre la dieta y la nutrición; (8) Y por último, un programa de reconocimiento para acabar con los desperfectos físicos.

Se apuntan las diferencias en el tratamiento de las parálisis flácidas y espasmódicas. Los autores hacen hicapié, especialmente, en que él éxito de tal programa de reacondicionamiento exige un conocimiento especial, mucha práctica y largas horas de duro trabajo en la parte que se refiere al tratamiento del paciente, así como la decisión del enfermo de bastarse a sí mismo siempre que sea posible.

Свод.

Авторы могут дать авторитетный доклад о прогрессе во время войны лечения и реабилитации при поражениях спинного мозга. Рассматривая условия, нужные для восстановления более или менее нормальной жизни этих больных, они подчеркивают необходимость координации разных специальностей: ортопедической, общей и пластической хирургии, психо-

логии, психиатрии, физической терапии и тренировки языка.

Подчеркнута важность немедленного лечения, потому что на почве этих повреждений автоматично возникают многие трудные условия. Дан следующий порядок мер: неврохирургические меры для облегчения давления на спинной мозг и для облегчения боли и спастичности; ортопедические исправляющие и стабилизирующие меры; квалифицированная физикотерапия для укрепления мышц, костей и суставов; урологические операции для ресторации контроля мочевого пузыря; урологические исследования возможности камней и инфекции; пластика пролежней; внимание к диэте и питанию и, наконец, реабилитационная программа с целью преодолеть психические повреждения. Указана разница в лечении вялых и спастических параличей. Авторы особенно подчеркивают, что успех такой реабилитационной программы требует специальное знание, квалификацию и долгие часы работы со стороны тех, кто лечит больных, а также и твердую решимость со стороны самого больного сделаться насколько возможно самостоятельным.

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IMPENDING DEATH UNDER ANESTHESIA

(Continued from page 10)

de una jeringuilla o jeringuillas dentro del tuétano del hueso mejor que la aplicación de la cánula a una vena. Su propia experiencia en el uso de la troca y cánula de punción externa, le han dado resultados de gran éxito.

Свод.

Автор описывает методику сердечного массажа в случаях белой или синей асфиксии с остановкой сердца при общей анестезии. Он считает этот способ оживления первым, а не последним средством. На основании своего опыта он приходит к заключению, что, если массаж сердца применен в первую минуту с половиной после того как сердце прекратилось биться, то шансы на восстановление его действия гораздо лучше, чем если больше времени протекло. Он дает три успешные последующие случаи, в которых это правило было применено. Укол желудочка сделан в первые 45 секунд по прекращении сердечного действия, и если результата нет, то немедленно применяется сердечный массаж.

Промежуток времени в случаях цианозной асфиксии является более длинным, так как мозг не лишен крови. В одном доложенном случае промежуток остановки сердца был, по крайней мере, 12 минут; результат был успешный.

Он также обсуждает острый вазомоторный коллапс и рекомендует ин'екцию жидкости при помощи шприца в костяной мозг вместо канюлизации вены. Его опыт в применении грудокостного троакара и канюлы был очень успешным.

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Dermoplasty of War Wounds of the Lower Extremity*

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THE outstanding surgical problem of World War II was the severity and great number of wounds of the lower extremity. Due to the magnificent work of front line surgeons, an extraordinary number of legs were saved from amputation. As a result of this, the ultimate number of "orthopedoplastic cases," as I shall call them, became a problem to conjure with in our war surgery. Many of these cases were of such severity that, although basically of an orthopedic character, they were consigned to plastic surgery because the coexisting severe loss of soft tissue made orthopedics a secondary consideration, at least for the time being. The placing of badly mutilated extremities into the hands of the plastic surgeon was a departure from the practice of all preceding wars, where amputation was the practice in such cases. It was a new milestone in the history of war surgery, which until World War II was essentially the surgery of shock, hemorrhage and infection. To this triad was now added the principle of tissue conservation and restoration. It is a transition from the surgery of despair to the surgery of repair.

The cases herein discussed, all from World War II, do not include burns. They are complex injuries, the result of land mines, booby traps, bullets or artillery fire, with the following general history:

1. In each case injury was due to a flying missile or was the result of a blast.

2. Immediate and total incapacity resulted from a large complex wound of the extremity. (Fig. 1.)

Fig. 1. Large complex war wound of right leg, showing almost complete loss of middle third of tibia and all overlying tissues. Healing has taken place by searring which extends into the deeper tissues of the leg. Considerable secondary searring of tissues collateral to original wound is evident; this must be excised at time of grafting. Fibula is not involved.

3. Efficient first aid was given within a few hours after the injury.

4. All surgical care overseas was planned in accordance with BGO Circular Letter No. 189, November 17, 1943, which read as follows:

"It is strictly forbidden that any compound fracture or that any extensive wounds of the extremities be treated with closure of the wound."

* Read at Eleventh National Assembly, U. S. Chapter, International College of Surgeons, Detroit, Michigan, October 22, 1946.

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As a result of these factors, most of the cases we received at the eight plastic centers in the United States presented the following clinical picture:

1. The patient was a young soldier with a well-splinted extremity and was usually in good general physical condition.

2. He possessed a leg with extensive loss or mutilation of soft tissue, a com-

Fig. 2. Compound fracture of left leg, 19 months after injury. Protruding portion of tibia is dead. It was drilled at former hospital soon after injury with above results. No deep infection, but wound refused to heal, due to collateral soft tissue involvement.

pound fracture, at times multiple, with deformity.

3. The relatively large loss of soft tissue was in various stages of healing, often with bone presenting. (Fig. 2.)

4. There was frequently actual loss of bone.

5. There was rarely any outward evidence of infection.

6. In wounds healed by extensive scarring, there were occasionally inclusion loci of pus, usually sterile, due to the use of sulfa drugs or penicillin or both.

7. The extremity showed signs of circulatory disturbance with tissue atrophy.

8. X-rays revealed comminution or loss of bone with presence of foreign bodies. (Fig. 3.)

This clinical pattern dictated the following plan of procedure:

1. Surgical assistance had to be given in the healing of these large open wounds as soon as possible, in order to avoid infection and prevent secondary changes in tissues collateral to the wound.

2. A method had to be decided upon to replace and restore the soft tissues missing in order that future orthopedic reconstitution could be made possible.

3. Measures had to be instituted in order to maintain the physiological integrity of the extremity, as well as the function of the joints.

4. The patient's general health had to be maintained or even augmented

Fig. 3. X-ray reveals comminution and extensive loss of bone with presence of foreign bodies. (See Fig. 12.)

while he was facing prolonged stay in the hospital and a series of operations.

5. Bone grafting could be resorted to only after the foregoing had been accomplished and after sufficient time had elapsed to allow for proper organization of healing and adequate com

munion between the grafts and the recipient sites.

6. Physiotherapy had to be employed after bone grafting in order to maintain the physiological integrity of the extremity and to realize good functional rehabilitation.

The assigning of these cases to the plastic surgeon became expedient for obvious reasons: first, the extensiveness of the injury destroyed all the conditions necessary for healing, as well as all the elements necessary for successful bone grafting; secondly, because the orthopedic surgeon by training and experience was not prepared to cope with such extreme losses and distortions of soft tissues.

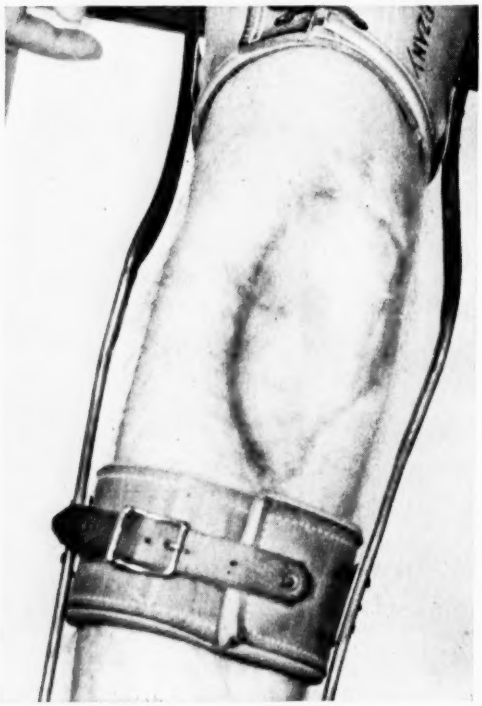

Fig. 4. Example of free grafting of original wound, to make a "closed" out of an "open" case. This procedure also obviates much of the fibrosis and distortion of tissues collateral to the wound.

The plastic procedures employed in the remedying of these injuries fell into two main groups:

1. The free grafting of the open wound, to expedite healing and to make a closed out of an open case. (Fig. 4.)
2. The reconstruction or reconstitution of the needed soft tissues.

Cases thus treated became a much easier nursing problem. This was of paramount importance due to the relative shortage of nurses in the army.

The reconstruction or reconstitution of the lost tissues was a more difficult problem. It involved the creation of massive grafts, too frequently when other parts of the patient's body most desirable for such grafts were also mutilated, and the transportation and implantation of these compound grafts into the wound.

The methods employed in general were the use of the single pedicle flap, sometimes referred to as the Italian method of repair, the French sliding flap, or the Filatov-Gillies tube.

The source of the surgeon's training, experience and, sometimes, prejudice, determined the choice of method. Many plastic surgeons, stimulated by the apparent ease and efficiency of the single pedicle flap method, were tempted into repairing practically all leg defects in this way. Others of us very early shied away from this method of repair for reasons to be given presently, and favored the tube graft or other methods which had to be modified to suit the exigencies of war surgery.

As a matter of fact, therein lies the crux of the whole matter of repair and rehabilitation of a severely wounded extremity. These two methods, the flap

and the tube, are the foundation of all radical plastic repair, yet they are basically two entirely different types of surgery.

It is the purpose of this paper to draw a comparison between these two methods, and to cite others, in the hope that a sound and effective procedure may be generally established, in anticipation of such problems in civilian practice or, I regret to conjure, another possible war.

Let us then compare the virtues and shortcomings of the two methods. (Fig. 5.)

As mentioned earlier, there seemed to be a general preference for the use of the pedicle flap because it seemed easier of construction and management and was thought to give more expeditious results. The tube graft was looked upon as a protracted method of repair which did not ultimately give any better results than the flap.

I cannot entirely subscribe to either one of the foregoing opinions. The number of surgical innings necessary in the grafting of a given defect via the tube is four. The same invariably holds true for the single pedicle flap. Whereas an entire tube can be made in one stage, it usually takes at least two surgical innings, as I call them, to complete a transferable flap; since delay is unavoidable if adequate circulation to the distal end is to be assured. Only two of the three sides of a flap can safely be incised at the first, immediately followed by undermining. Incision of the third boundary of the flap is a separate procedure, usually done two or three weeks after the first.

True, complete immediate transfer of a mass of single pedunculated tissue can and has been done often by many of us, but it entails considerable risk in the lower extremity. It most certainly cannot be held out as a promising routine.

Fig. 5

COMPARATIVE STUDY OF CERTAIN METHODS OF DERMOGRAFTING

Type of Graft	Anesthetic	Minimum No. of Surgical Innings	Minimal Reconstruction Time—(Days)	Type of Surgery	Splinting Necessary	Complications			Tissue Cost			Economics		Results				Psychological	Clinical Rating—%
						Pedicle %	Graft %	Late %	Pedicle	Donor Site	Other	Hospital Time	Expense	Anatomic	Functional	Collateral Physiol.	Esthetic		
Single Peduncle Flap	L. Sp. S. P.	4	50	Open	Max.	17	14.5	5.9	Mod.	Max.	Mod.	Max.	Max.	Fair	Good	Fair	Good	Fair	70
Tube	Gen. Sp.	4	66	Closed	Opt.	5	3.5	2	Max.	Min.	Min.	Mod.	Mod.	Good	Exc.	Good	Good	Good	80
"Pincushion" Flap	Gen. Sp.	3	44	Closed	Opt.	3	1.5	0.5	Mod.	Mod.	Mod.	Mod.	Mod.	Good	Exc.	Good	Good	Good	85
Double Peduncle Flap	L. Sp.	1	18	Closed	Min.	1.5	1.5	1	Min.	Negl.	Min.	Min.	Min.	Exc.	Exc.	Exc.	Exc.	Exc.	94
French Flap	L. Sp.	1	14	Closed	Min.	2	1.5	0.5	Min.	Negl.	Min.	Min.	Min.	Exc.	Exc.	Exc.	Exc.	Exc.	100

L. =local
Sp.=spinal
S. P. =Sod. Pent.
Max.=Maximal
Opt. =Optimal
Mod.=Moderate
Negl.=Negligible
Min. =Minimal

"Other" under "Tissue Cost" refers to need for split grafts for donor area
"Psychological" considers effect of procedure on patient morale.

Consequently, the usual stage of transfer in the case of a single pedicle flap is the third surgical inning. One more surgical step, at least, is necessary in order to complete the translation of the flap into a graft by amputating it at its peduncle and embedding it into the surgical defect created by excision of the wound.

In contrast to the foregoing, the construction of the tube needs only one surgical inning. The transfer of it, on the other hand, necessitates two surgical steps because only one peduncle at a time can be cut. The fourth step is taken up by the opening, spreading and embedding of the opened tube. Hence, in terms of the number of surgical procedures, the tube does not differ from the flap.

Now what of the actual time element involved in the two methods from the preparation of the flap or the tube to the final embedding or grafting of the defect? In the case of the tube, three weeks must be allowed to elapse before the first peduncle can be transferred or the tube "waltzed." Four weeks should be allowed for the transfer of the second peduncle and two or three weeks are necessary before opening, spreading and embedding of the tube can be safely performed. In other words, before the tube can be translated into a graft, an over all time of nine to ten weeks is needed.

In the case of the single peduncle flap, two weeks should elapse between the first and second stages of its construction. Two weeks are then necessary in the "delay," preceding its transfer to the site of the defect. Two to three weeks more must then elapse before section of the peduncle and embedding of the flap. This consumes a period of from seven to eight weeks.

Hence, on the basis of the time alone, the flap would have an advantage of about two weeks to recommend it. But time can never be of primary concern in plastic surgery for the uncompromising essence of the grafting of defects is not mere physical reconstruction but physiological restitution. An operation which fails in the reasonable accomplishment of the latter, can well be put down as a surgical defeat.

Consequently, the time consumed should never be the most important consideration. This vital principle was at first rather difficult to sell, not only to higher authority but to some of our orthopedic colleagues as well. It seemed to them that the anatomic closure of a defect was sufficient temptation for bone grafting without realizing that mere physical reconstruction without physiological restitution is not much better for orthopedic entry than a scarred defect *per se*.

The number of surgical procedures necessary in either method being the same, and the time element not being of primary importance, it seems to me that the factors which ultimately should determine the choice are the following:

1. Which method is more nearly a physiological procedure?

2. Which method comes closer to an ideal surgical procedure from the standpoint of tissue cost, surgical exigency and ease of postoperative management?

3. Which method consistently gives better ultimate results?

Here the issue becomes clearer. Accepting the principle that "closed" surgery is the best surgery, it is immediately apparent that only the tube meets this demand. At no time in the entire process involving the use of the

tube is there need for exposing raw surfaces to the unavoidable pathologic changes inherent in all open wounds such a fibrosis, lymph stasis, infection and ultimate scarring. The peduncle of a flap is at best a semi-closed wound even when carefully free grafted. Should the latter be completely successful it is still a pseudo-physiological condition since there can be no normal physiological communion between the adipose subcutaneous tissue of the flap and an epidermic dressing because it is an unnatural biological relationship.

The accusations here laid against the flap and in favor of the tube are borne out by many clinical evidences. Some of these are the greater amount of subcutaneous fibrosis in the graft which originated as a flap, the more frequent puckering of the flap-graft postoperatively, greater incidence of pigmentary changes in such a graft, more protracted and prolonged starvation and consequent thinning of the graft, a greater frequency of postoperative infection in the flap and a high incidence of the transportation of latent infections via the flap to the recipient site or the grafted area, and less consistent esthetic results than are obtained with the tube. As a specific example, carefully kept statistics by the author show a much higher frequency of infected bone grafts insinuated under a flap graft than under a tube graft. The incidence is five to one over that of the tube.

Fig. 6. Dotted line indicates extensive sclerosed soft tissue defect overlying absent middle third of tibia. Curved heavy black line indicates position and extent of leg incision, to extend half way through subcutaneous tissue, at which level undermining begins in a medial direction to form the double pedicle "bridge flap."

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It seems then that there should be little question as to which is the preferable method for general use, the single pedicle flap or the tube.

Now if we could combine the virtues of both the single pedicle flap and the tube, a more nearly ideal procedure could perhaps be evolved in the management of severe injuries of the extremities. With this in mind, a procedure was arranged, based essentially upon physiological considerations and proven methods in plastic surgery; this was reported in the *American Journal of Surgery,* Volume 69, No. 1, July 1945, under the

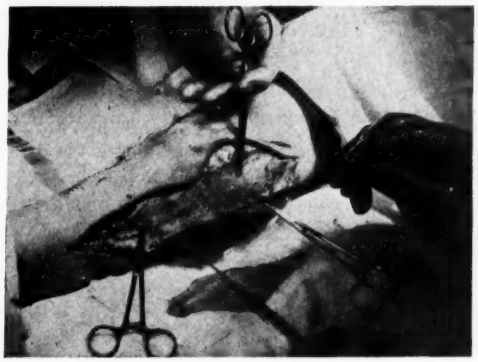

Fig. 7. Defect has been excised and "bridge flap" moved over defect and sutured in place, leaving large surgical defect on lateral side of leg. Deep layer of subcutaneous tissue over lateral side is dissected from the deep fascia and turned down for amputation, helping to shorten circumference of leg, and reducing surgical defect.

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title of "Dermoplasty of War Wounds of the Lower Leg."

The procedure, in short, consists of the excision of the wound, be it sclerosed, healed or open; this is then followed by an incision roughly parallel to that wound (Fig. 6) and *specific* undermining of the tissues between the incision and the wound. Thus one creates a double pedicle flap of tissue which when properly and very carefully undermined *at a certain level through the adipose tissue underlying the skin,* forms a bridge which can then be moved over the defect and sutured into place, thus oblating the wound. (Fig. 7.) The resulting surgical defect can then be free grafted in accordance with the predilection of the surgeon.

Before grafting the surgical defect, it is usually possible to extirpate the fatty tissue lateral to that defect (Fig. 8), thus permitting its reduction in size by increasing the elasticity of the overlying skin. In this way, a smaller free graft will suffice for the closure of the final defect than would have been necessary for the closure of the original defect. (Fig. 9.) It is rarely, if ever, necessary to use all the subcutaneous tissue underlying the skin of the lateral or medial side of the leg, and when this does become necessary, it is better to use the deeper one-half of the subcutaneous tissue as a separate flap which can be dropped or placed into a bone defect to avoid dead space. (Fig. 10.) When all the subcutaneous adipose tissue is taken up with the flap, the elasticity of that flap is never as great as when only about half the thickness of the adipose tissue is carried with the skin. There is so little subcutaneous tissue over the tibia normally that a peculiar cosmetic appearance results if the total amount of available subcutaneous tissue is carried with the skin flap.

Aside from the mechanical advantages of this method, it can also readily be seen that this is a better physiological procedure than either the tube or the single pedicle flap because the "bridge flap" has both a double pedicle circula-

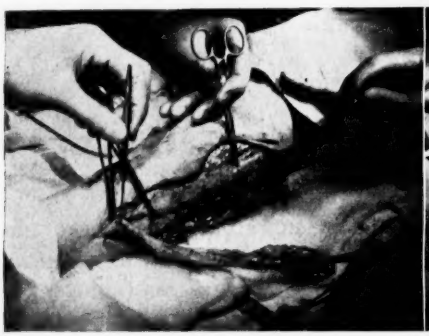

Fig. 8. Deep fat over lateral side of leg has been amputated and some of adipose tissue on posterior aspect of the leg is now being excised in form of long narrow sections. This avoids injuring large blood vessels usually found in the deep fatty tissue. The calculated excision of this tissue further shortens circumference of extremity.
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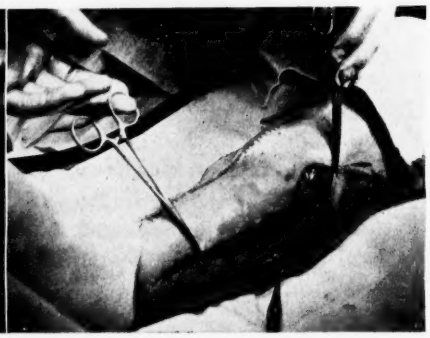

Fig. 9. Fat formerly overlying calf muscle has been totally excised. Both upper and lower angles of surgical defect have been undermined, as well as lateral side of defect. This has resulted in a shortening of the leg circumference, so that the angles of the wound have been approximated to such a degree that defect is reduced by 40 per cent, thus making it smaller than the original ulcer.
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tion as well as a maximal conservation of its innervation. (Figs. 11, 11a and 11b.)

Because of the extensiveness of the war wounds, particularly of the leg, the

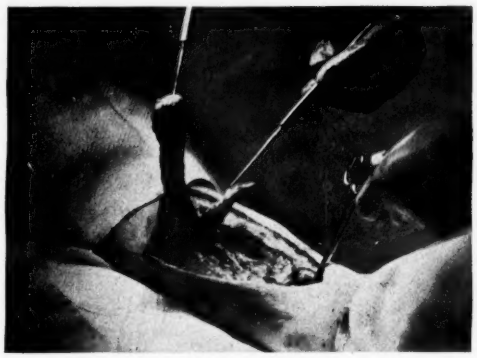

Fig. 10. Method of utilization of unexcised deep layer of subcutaneous fat, in filling bony defects remaining after removal of dead or at times still infected bone. The large long pedicled fat flap was designed to reach into deep distal bony defect just above ankle and indicated by hemostat. The smaller flap was designed to fall into dark depression in tibia midway between pedicle of flap and hemostat. Only a double pedicle "bridge flap" which has its own circulation could survive over such a bed. Free grafts are out of the question.
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aforementioned procedure was later modified in the following manner: instead of making a parallel incision either on the lateral or medial side of the leg, the distance of which from the wound was equal to the diameter of the defect, a vertical incision of indicated length on the posterior aspect of the calf of the leg was made. (Fig. 12.) The subcutaneous tissue of the leg could then be undermined in either direction, medially or laterally, from the posterior vertical incision as far as the tibia in front or the defect involving the anterior leg. The skin flaps were then replaced for "delay" for twelve days.

This amounted to a complete shelling out of the leg from its skin and subcutaneous investments. One then had two enormous double pedicle flaps, one medial and one lateral, which, after proper and very careful undermining, could simply be shifted anteriorly over the tibia and sutured to each other. The resulting surgical defect, always on the posterior aspect of the leg, was relatively large and always remained on

Fig. 11. Twenty days postoperative. The "bridge" over the tibia is completely healed, soft, well-attached to bone beneath it, warm and of normal color. A slight flatness may be discerned where tibial non-union exists, in center of flap. Medial suture line is hardly visible. The free full thickness graft on lateral side of leg, with exception of a few superficial points of epithelial discoloration, is well healed and already of good color. At extreme upper angle of free graft is a small epithelial diastatsis due to removal of a thin scab. Patient states this foot "feels warmer and better than it has since the injury."
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the posterior surface of the leg where, after grafting, it was less conspicuous. (Fig. 13.)

As in the original procedure, if only about half the thickness of the subcutaneous tissue was left on either one of these flaps just mentioned, the remainder of the subcutaneous tissue, after approximating the flaps anteriorly, could be carefully removed from the underlying deep fascia and discarded. This resulted in a shortening of the circum-

ference of the leg which then permitted reduction of the posterior surgical defect by direct approximation of the superior and inferior angles thereof, so that the ultimate defect was appreciably reduced. In fact, the original surgical defect on the back of the leg could thus be reduced by direct approximation from 20 to 60 per cent of its original size without interfering with the circulation of the extremity. Whatever the size of the ultimate defect, it was free grafted in the same manner as referred to in my first procedure.

that necroses do not result, in spite of careful dissection, because of interference with the circulation of the flaps. But where this operation is judiciously chosen and meticulously executed, it is the most rapid way of oblating extremely large wounds of the leg or, for that matter, of any part of the lower extremity, without interfering with its circulation and with far better functional and cosmetic results than can be obtained by any other method. (Fig. 14.)

There are certain cases, nevertheless, where the single pedicle flap from the

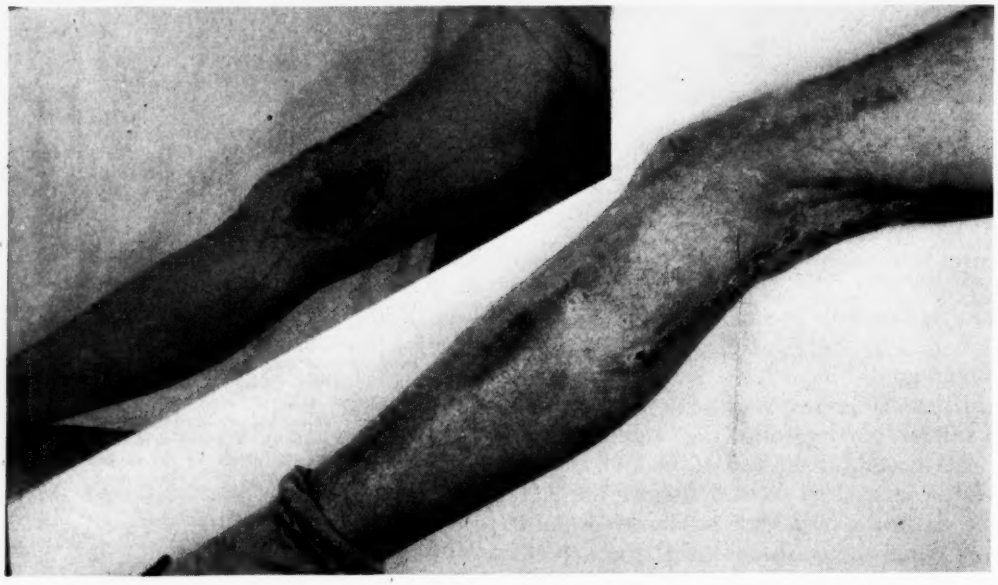

Fig. 11a (inset). Illustrating the application of the "bridge flap" to large compound defect of the thigh. Lower one-fifth of femur is absent, knee joint is destroyed. Dark line about defect illustrates extent of excision of sclerosed wound. Line below defect is inferior extremity of contemplated lateral incision to form "bridge flap." After excision of wound, infra-patellar ligament was cut and patella turned up and into bony gap in femur, so as to establish bony continuity between it and joint surface of the tibia. *Fig. 11b.* Two weeks after dermoplasty, defect shown in Fig. 11a is oblated, covered by "bridge" of tissue. Surgical defect resulting from moving of tissue "bridge" anteriorly is shown free grafted, with a few small crusts still clinging to the suture line posteriorly. Knee joint is stiff, but patient is able to walk, after one surgical inning.

It must be obvious that this type of operation is a rather radical procedure. Too, it can be applied only to certain selected cases where the tissues of the leg are still well enough nourished so

contra-lateral extremity is the only logical tissue available. These are cases where the tissues surrounding the wound are likewise injured or scarred, where the circulation of the extremity

as a whole is poor, where the defect is so extensive that little or no tissue is left in the vicinity with which to cover it, where anything more than the simple flap was folded under its proximal half, thus making a double flap out of it, or, as John Staige Davis calls it, "a self-lined flap." The free end was then

Fig. 12

Fig. 13

Fig. 14

Fig. 12. Author's modification of principle of dermoplasty, placing major incision on posterior aspect of leg. It is reflected in mirror, while defect or lesion is visible anteriorly overlying loss of middle third of tibia as shown in Fig. 3. *Fig. 13.* Same leg as in Fig. 12 after one-stage soft tissue repair, one month postoperative. Note small size of free graft on posterior aspect of leg, as reflected in mirror. In certain well-selected cases, bone grafting was done at time of soft tissue repair with good results. *Fig. 14.* Same type of case as shown in Fig. 12, four months after operation, in which dermoplasty and bone graft of tibia were successfully done at one time.

excision of the wound may jeopardize the already poor integrity of the extremity and lead to disaster, or where for some reason a tube is out of the question or not available. Here a "closed" single pedicle procedure would be a more nearly ideal method than the one commonly employed.

In such cases, a single pedicle flap was made as usual except that all three of its edges were incised during the first surgical procedure. Instead of replacing it in its original bed as would be the conventional way (Fig. 15) to insure its circulation, the distal one-half of the

Fig. 15. Conventional method of replacing simple pedicle flap for purposes of "delay" and assuring integrity of its circulation.

sutured to the underside of the root of the peduncle. The parallel edges of this cushion of tissue were then sutured to each other as is shown in the illustration. (Fig. 16.) This created what actually is a tissue cushion. For want of a better word I am in the habit of referring to it as the "pin-cushion" flap. The raw donor surface remaining after the creation of this flap was simply free grafted as is done in all other procedures where a raw surface remains. It was very quickly found that there were certain points of advantage not anticipated at first.

Fig. 16 (above). The "pin-cushion" flap. Defect of right ankle was a deep sclerosed area as shown, "freezing" the *tendo achillis*. Point of entry of bullet is seen in center of sole of foot.
Fig. 17 (below). Shows "pin-cushion" flap opened and sutured into ankle defect; pits in flap are due to subcutaneous chromic sutures used to approximate flap to *tendo achillis*. Black line across proximal end of flap indicates last line of attachment of flap to leg and beginning of raw area which was free grafted. Even this could be avoided if one opened the "pin-cushion" flap by incising the under side at point of black line. But this would increase "tissue cost" of repair and shorten opened flap by that much. In instances where peduncle of flap is too difficult to free graft, such tissue sacrifice may be indicated. Communion between free graft and flap was maintained by roll of scarlet gauze, showing black in photograph. Note how snugly right leg is fitted under flap; minimal amount of padding between right ankle and left thigh because donor area is healed and dry at this stage (see text); and comfortable position of legs. No plaster of Paris casts are necessary and dressings are reduced to minimum because donor site is healed.

1. As indicated above, this flap could be created in one surgical inning.

2. The distal free end of the newly created flap, by being immediately sutured to the proximal arterial supply of the flap, survived much more formidably than if delayed in the usual manner.

3. The fatty tissues of the flap showed very little, if any, postoperative fibrosis when the flap was eventually opened up and inspected.

4. The flap could be re-opened and transferred earlier than if the simple conventional delay was practiced. (Fig. 17.)

5. The flap was far more elastic than the delayed flap.

6. There was no tendency to postoperative puckering.

7. There was no tendency to postoperative pigmentary changes.

8. As was proven by experience, the tissue of the flap had a decidedly better chance of survival if a postoperative infection set in, because these flaps have a much more formidable circulation than the conventionally delayed flap made in two or more surgical innings.

9. The management and surgical hygiene of the donor area was easier and better because the recipient area did not have to be brought into the picture at

this time, as is the practice in the conventional procedure.

10. The ultimate cosmetic results in the donor area were much better. (Fig. 18.)

11. Because of the flap's better physiological integrity, the problem of splinting of the flap to the recipient site was a less anxious one. In none of these cases was it felt necessary to encase the extremities in the heavy, cumbersome and unhygienic plaster of Paris. Simple adhesive strips strategically placed and re-enforced by elastic bandage were always sufficient for splinting and, of course, far more comfortable for the patient.

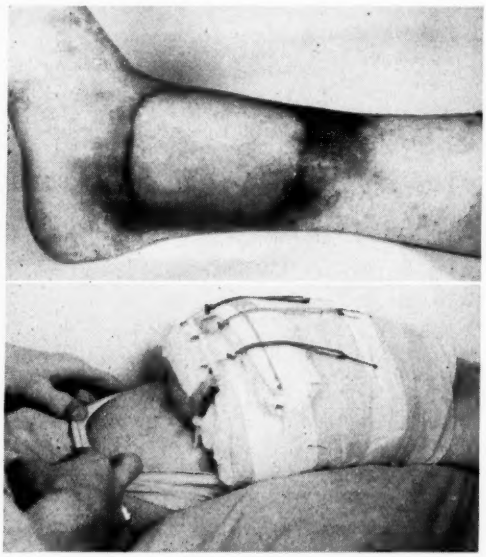

Fig. 18 (above). Three weeks postoperative; to illustrate viability of "pin-cushion" graft even though in a region with collateral tissue changes resulting from severe war injury, partially evidenced by pigmentary changes. Notwithstanding, physiological integrity of graft and cosmetic result is better than with simple pedicle flap.

Fig. 19 (below). Illustrates basic dressing for "pin-cushion" flap. Note collodion strip embracing only end of double flap. Into this are inserted three safety-pins, each with a rubber band on it. Bands are anchored to adhesive strips over top of dressing to maintain slight continuous elastic tension on the flap. This avoids contraction of flap and possible interference with circulation. Flap is then covered by additional dressings.

12. Last, but not least, this type of flap has a subtle advantage in that there is no necessity for transferring it within a given period of time after its construction for fear that the underside of the flap will establish communion with its source of origin, thereby necessitating re-delay.

There are just two precautions necessary in the management of this flap that should be mentioned here. After the formation of the flap, constant though minimal traction is necessary. (Fig. 19.) This should be applied only at the point where the flap is folded upon itself and not to the entire flap surface. It was found from experience that actually no stretching of the tissues occurred when traction was applied over the entire area of the flap.

The only other and obvious precaution that one should make is that at the time of the unfolding of the flap one must be careful not to cut into the circulation of the peduncle. That is not an impossibility when the underfolded half of the flap is being laid open into its original position.

After unfolding the "pin-cushion" flap, the remainder of the reparative procedure is the same as in the case of the conventional flap.

SUMMARY

Certain conventional methods employed in the soft tissue reconstruction of war wounds of the lower extremity in World War II are discussed. These range from the use of the free graft, through the pedicle graft, to the tube graft.

A comparative critique of the various methods is put forth. It is found that the preferential use of the tube graft, on the grounds of physiological surgery, as well as the quality of the final results, is well supported. A projection of the theory of the relaxing incision of Celsus, with specific modifications of the resulting adjacent double pedicle is described. This is referred to in the *American Journal of Surgery,* Volume 69, No. 1, July 1945, under the title of: "Dermoplasty of War Wounds of the Lower Leg." The entire method is an integration of certain accepted and proven principles and practices in plastic surgery.

Finally, the "pin-cushion" flap is described in its application to extensive wounds of the lower extremity. This method likewise is but the extension of certain established and well known practices in plastic surgery.

CONCLUSIONS

1. The use of free grafts in reconstruction of extensive war wounds of the lower extremity is decidedly limited.

2. The use of the single pedicle flap as employed under ordinary circumstances and according to conventional methods is unphysiological.

3. The Filatov-Gillies tube is the graft of choice, where a choice can be made between the foregoing three, from the standpoint of physiological surgery as well as ultimate results.

4. Modifications of the single pedicle flap are preferable to the open flap method and have given better ultimate results.

5. It is hoped that the discussion of this subject will stimulate further thought and study in the direction of more physiological restoration of extensive wounds of the lower extremity.

SOMMAIRE

Certaines méthodes conventionelles employée pour la reconstruction des plaies de guerre des tissus mous du membre inférieur, subies durant la second guerre mondiale sont discutées: l'emploi des greffes pédiculées, des greffes tubaires, etc.

Il fait une critique comparative des différentes méthodes. Il vait que l'emploi des greffes tubaires a de nombreux adhérents. Elle donne d'excellents résultats dans certains cas. Il décrit la théorie d'incisions relachantes de Celsus, avec modifications spécifiques du pedicule double adjacent. Cette méthode est étudiée dans *American Journal of Surgery,* Vol. 69, No. 1, sous le titre de "Dermoplastie des plaies de guerre, interessant la jambe." Cette méthode est une integration de principles et de techniques acceptés et approuvés de la chirurgie plastique. Finalement, l'auteur discute l'application de lambeaux ("pin-cushion" flap) pour les plaies étendues de l'extremité inférieure. Cette méthode est un développement de procédés bien établis et bien compris de la chirurgie plastique.

RESUMEN

Se exponen en este artículo algunos de los métodos empleados en la reconstrucción de los tejidos blandos en las heridas sufridas en las extremidades inferiores durante la Segunda Guerra Mundial. El estudio se extiende desde el injerto libre hasta el injerto de cuerda, pasando por el injerto de pedículo.

Sobresale en este estudio una crítica comparativa de varios métodos. Se encuentra que el uso, preferentemente, del injerto de cuerda, en el terreno de la cirujía fisiológica, lo mismo que la calidad de los resultados finales, tienen una

base firme. Se describe una proyección de la teoría de Celsus sobre la incisión de relajamiento, con modificaciones específicas del resultado del doble pedículo adyacente. Esto se refiere al artículo publicado en el volúmen 69, n° 1, de julio de 1945 del *American Journal of Surgeons*, con el título "Dermoplástica de las Heridas de Guerra en las Extremidades Bajas." La totalidad del método es una integración de ciertos principios aceptados y probados y alguas prácticas de la cirugía plástica.

Свод.

Рассмотрены некоторые общепринятые способы реконструкции мягких тканей, примененные во второй мировой войне, а именно: свободный, ножковой и трубочный трансплантат. Дана сравнительная критика этих разных способов. Найдено, что трубочный трансплантат предпочтителен не только на основании физиологической хирургии, а также на основании конечных результатов. Описано применение теории об освобождающем надрезе Celsus'a и специфические модификации получающейся двойной ножки. Это описано в American Journal of Surgery, том 69, № 1, Июль 1945 г., под именем: "Дермопластика военных ран нижней конечности". Вся метода является интеграцией известных принятых и доказанных принципов и методик пластической хирургии.

В заключение описан "подушечковый" лоскут и его применение в обширных ранениях нижней конечности. Эта метода также является только расширением уже установленных и широко практикующихся принципов пластической хирургии.

SURGICAL CONCEPT IN HYPERTHYROIDISM

(Continued from page 17)

SOMMAIRE

L'auteur étudie le traitement non-opératoire et preopératoire de l'hyperthyroidisme. Il énumère les indications pour l'intervention chirurgicale et nous donne sa technique pour la résection de la glande thyroide. Il préconcise sa méthode pour exposer la glande et pour la résection du goitre. Sa technique est décrite et illustrée en détail et fut employée dans deux cent trente cas consécutifs sans mortalité.

RESUMEN

Teniendo como base su amplia experiencia, el autor pode de relieve la terapia no operativa y pre-operativa, las indicaciones para la intervención quirúrgica y su propia técnica para la resección de la glándula tiroides, particularmente su método simplificado de descubrir la glándula y la papera por resección. Esta técnica está completamente descripta e ilustrada y ha sido puesta en práctica por el autor en 230 casos consecutivos sin producirse ni una sola defunción.

Свод

На основании своего широкого опыта автор обсуждает неоперативную и дооперативную терапию гипертироидизма, показания на хирургическое вмешательство и его собственную технику резекции щитовидной железы, в особенности описывая его упрощенную методу обнажения щитовидной железы и зоба. Эта методика вполне описана и иллюстрирована, бывши применена в 230 последующих случаях без смертельности.

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Anatomical and Surgical Considerations of the Phrenic and Accessory Phrenic Nerves*

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INTRODUCTION

THIS study of the phrenic and the accessory phrenic nerves and their anatomical importance in surgery was undertaken after one of those mishaps that a surgeon occasionally meets with in his every day practice. The circumstances were as follows: A female patient of 38 years was admitted into a general hospital with an out patient diagnosis of "anemia and general debility." On routine examination by the students and the medical supervisor, it was discovered that the patient, in addition to being anemic, had tubular type breathing over the upper part of the right lung. Radiogram of the chest showed multiple cavities of the upper part of the right lobe with enlargement of the tracheabronchial lymph nodes. The left lung was apparently healthy. The patient was admitted to a tuberculosis sanatorium for treatment. After two months' stay in the sanatorium, her anemia was brought under control, her temperature remained normal, and her blood examination showed red blood count, 3,500,000; hemoglobin 62 per cent; white blood count, 15,800, with neutrophiles 63 per cent and lymphocytes 34 per cent. The sputum examination did not reveal any acid-fast bacilli, but the tuberculin test was + +. Artificial pneumothorax had been done a few days previously and the lung was partially collapsed on the right side with slight displacement of the mediastinum towards the left side. The patient refused to stay in the sanatorium and later came under my treatment.

It was at this time that I performed a phrenic avulsion. I adopted the following procedure in performing the operation. The patient was placed on her back in a horizontal position with her head slightly retracted and her face turned towards the left side to an angle of about 40 degrees. Selecting a natural cutaneous crease, about 2.5 cm. above the medial one third of the right clavicle, I infiltrated 1 per cent planocaine subcutaneously for a distance of 3.5 cm. starting from the posterior border of the sternocleidomastoid muscle and proceeding backwards. I waited for about three to five minutes for the anesthetic to take full effect; I consider it to be essential to mention this because I have seen surgeons incise the skin immediately after the injection and blame the anesthetic without giving it time to act. The ensheathing layer of the deep cervical fascia was incised, the external jugular vein was observed crossing from above downward and medially. The vein was retracted medially by "Tape retractors," and, by blunt dissection with Mayo's scissors, without difficulty, I was able to identify the brachial plexus and the scalenus anterior muscle. I placed my little finger inside the wound and felt the scalene tubercle over the inner border of the first rib to be sure about the anatomy of the scalenus anterior muscle.

* Thesis for Fellowship in the International College of Surgeons.

The phrenic nerve covered over by a thin layer of fascia was identified resting on the anterior surface of the scalenus anterior muscle. I injected about a cubic centimer of the anesthetic into the nerve sheath and waited for a few minutes for it to act. Meanwhile, I identified the upper trunk of the brachial plexus, the accessory roots of the phrenic and the nerve to subclavius. I always make it a point to search for these accessory roots from the upper trunk and cut them there instead of searching for them in a lower, more dangerous area in the root of the neck. In this particular case, I was not able to find the accessory roots, but the nerve to the subclavius was present. Therefore, I sectioned the main phrenic nerve and the nerve to the subclavius at the level of the sixth cervical vertebra, caught the distal cut end of the main nerve with a forceps and twisted it over the end of it. It was at this moment that there occurred the mishap that I mentioned previously. The operative field, which was hitherto bloodless, suddenly filled with blood from the bottom, and it was impossible to control the bleeding since I could not locate any bleeding vessel. I was sure that I had not injured any blood vessels in the operative area. Pressure was therefore applied over the subclavian artery and even then, the bleeding did not stop. I thought, therefore, that one of the veins in the root of the neck had ruptured. I extended the original incision downward and medially as far as the medial end of the clavicle, caught the subclavian vein at a point before it joined with internal jugular vein and ligated it, as well as the axillary vein in its first part. This brought the bleeding under control. By this time the patient had lost about 200 cc. of blood and signs of shock set in. Treatment of shock by elevating the feet, warmth to the body and blood transfusion was immediately instituted. The wound was revised. After removal of the blood clots and making the field bloodless, I made bold to find out the cause of the bleeding. To my great surprise, I found that the subclavian vein had been lacerated in about a quarter of its circumference and a small nerve was lying in the lacerated vein almost adherent to it. A little dissection showed that this small nerve, when traced downward, joined the phrenic nerve in the root of the neck. Evidently it was the accessory phrenic nerve which was adherent to or piercing the subclavian vein, before it joined the main phrenic nerve. During the avulsion, this nerve lacerated or tore the subclavian vein, which resulted in the severe hemorrhage. The wound was closed with drainage and it was fortunate the patient recovered satisfactorily, although she had every chance of succumbing with air embolism or hemorrhage or mediastinal pressure.

PROCEDURE

This incident prompted me to refer to the literature on the subject. I found that a number of papers have been written on the anatomical as well as surgical aspects of the phrenic nerve from the time of Felix up to the present moment. But in all these papers, I found that there was some difference of findings by various authors about the incidence, the course and the relations of the phrenic and accessory phrenic nerves. I thought I should dissect the phrenic nerve and the accessory phrenic nerve on as many cadavers as I could get, and tabulate the abnormalities that I could detect. The only place where I could get the bodies to dissect in large numbers was in the anatomy departments of medical schools. I decided, therefore, to have the cooperation of the students of anatomy who dissect the bodies routinely so that I could dissect the sides and root of the neck

with them. In all I had the opportunity of dissecting 203 bodies and on both sides of the neck. Of the 203 bodies dissected, 114 were male and 89 female, and the ages varied from 18 to 64. On none of these bodies had a previous operation on the neck or the inlet of the thorax been performed.

FINDINGS

Based on the careful dissection of these 203 cadavers (or 406 "sides of the neck"), the phrenic nerve can be broadly described as being formed by the union of nerve fibers given off from the fourth, the third and the fifth cervical nerve roots. Most of the fibers (about 75 per cent) are derived from the fourth cervical nerve, some (less than 25 per cent) from the third cervical nerve and a small number from the fifth. At its formation, the nerve rests on the levator scapulae and the scalenus medius and is covered by the sternocleidomastoid muscle. It descends almost vertically, with a slight inclination medially, and gains the anterior surface of the scalenus anterior muscle by winding around the lateral border of the upper portion of the muscle. Since the muscle is directed downward with an inclination laterally, and the nerve is directed downwards with an inclination medially, the nerve crosses the anterior surface of the muscle lateromedially, maintaining predominant downward direction. As it rests on the scalenus anterior muscle, it is almost glued to its anterior surface by a thin layer of fascia of the muscle—the prevertebral layer of the deep cervical fascia. This fascia is so thin that the nerve shines through it. In the root of the neck, the nerve descends vertically in front of the first part of the subclavian artery, behind the subclavian vein, and crosses the internal mammary branch as the latter takes off from the subclavian artery. Further down, the phrenic nerve usually receives a small filament from the nerve to the subclavius if those fibers have not entered into the formation of the phrenic nerve at its origin. The nerve to the subclavius is given off from the upper trunk of the brachial plexus at the point where the fifth and sixth cervical nerves unite to form the upper trunk. It is a slender nerve enclosed in a sheet of fascia that lies between the lateral border of scalenus anterior and the posterior belly of the omohyoid and it descends almost vertically in front of the brachial plexus. It reaches the posterior border of the medial one-third of the clavicle where it usually divides into a constant lateral branch which joins the subclavius muscle and an inconstant medial branch which joins the main phrenic nerve. The latter branch is called the accessory phrenic nerve. It descends into the thoracic cavity in front of the subclavian vein and behind the medial end of the clavicle and joins the main phrenic nerve after crossing the front of the internal mammary artery below the subclavian vein (fig. 1). For purposes of description, the third, fourth and fifth roots of the phrenic nerve are called "main roots of the phrenic nerve." The branch given

KEY TO ABBREVIATIONS USED IN DIAGRAMS

a. Main root from the third cervical nerve. *b*. Main root from the fifth cervical nerve. *c*. Nerve to subclavius. *d*. Accessory phrenic nerve. d^1. Second accessory phrenic nerve. *f*. Accessory root of phrenic nerve from *ansa hypoglossi*. *g*. *Ansa hypoglossi*. *h*. Communication from phrenic nerve to nerve to subclavius. *i*. Accessory root of phrenic nerve from sixth cervical nerve. *j*. Plexiform arrangement of phrenic nerve. *k*. A branch from nerve to subclavius ending in a ganglion in the root of the neck. *l*. Third and fifth cervical roots uniting and supplying diaphragm separately.

off from the nerve to the subclavius is called the "accessory phrenic nerve" and all other branches that join the main phrenic nerve are called "accessory roots of the phrenic nerve."

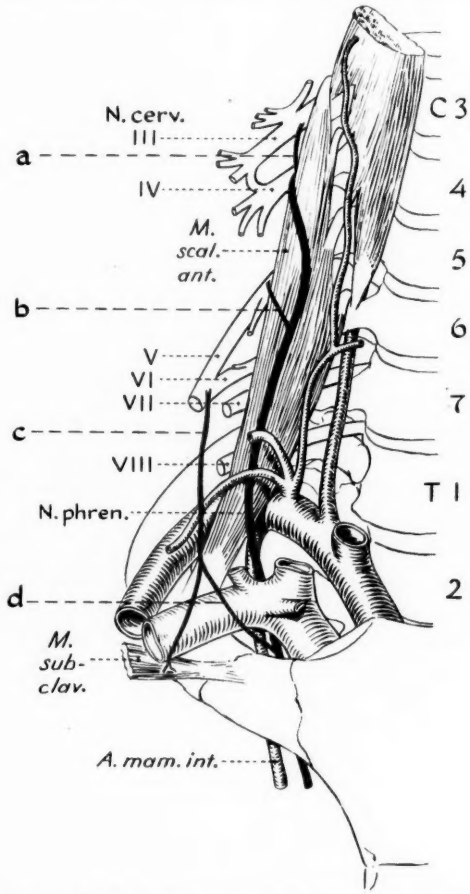

Fig. 1. Classical arrangement of the phrenic nerve, its roots and components.

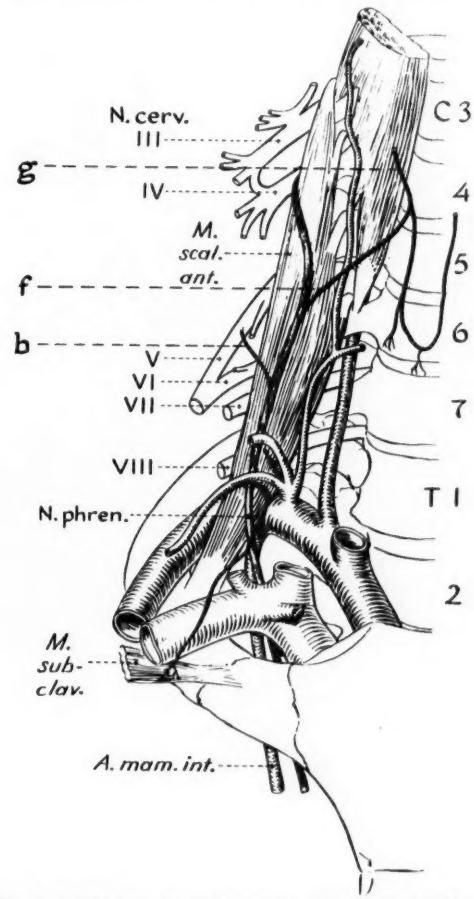

Fig. 2. Variations in arrangement. The main phrenic nerve formed by roots from only the fourth and fifth cervicals.—It also receives an accessory root from the *ansa hypoglossi*. The nerve to the subclavius is given off from the main phrenic at the inlet of the thorax. No accessory phrenic is present.

ABNORMALITIES

The above description of the phrenic nerve, the nerve to the subclavius and the accessory phrenic nerve was found in the majority of the cadavers dissected. The following abnormalities were detected:

I. *Abnormalities of the nerve to the subclavius:* The nerve to the subclavius was found in all the 406 sides of the neck, but there was some abnormality in the formation of some of them:

(1) In 92 instances, the nerve originated from the fifth root of the brachial plexus only, instead of from the upper trunk.

(2) In 48 instances, this nerve bifurcated into its two components at a higher level than usual, i.e., at about the level

of seventh cervical vertebra (fig. 6). The rest of the course of the nerve was as usual.

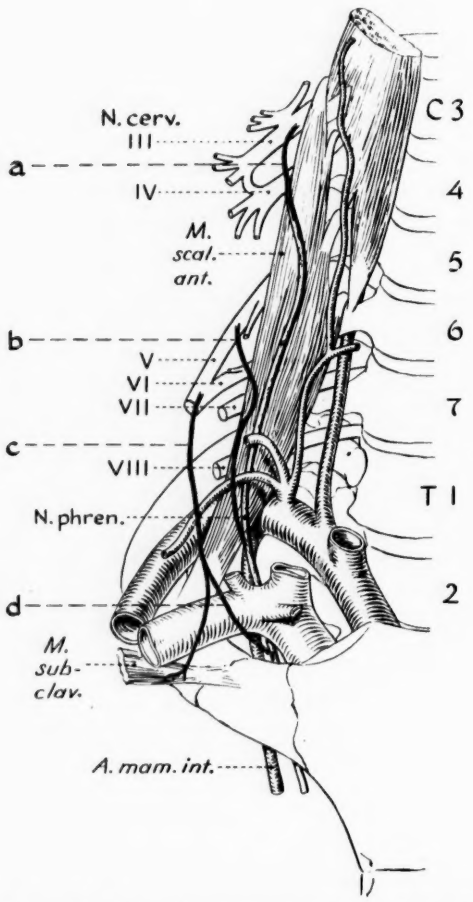

Fig. 3. Variations in arrangement. The third, fourth and fifth cervical nerves form the main phrenic trunk. The fifth does not join the trunk, however, until it reaches the level of the first thoracic vertebra having crossed the transverse scapular vessels anteriorly. An accessory phrenic is in evidence.

(3) In six instances, the nerve to the subclavius was given off, not from the brachial plexus but from the main phrenic nerve at the inlet of the thorax. In these cases, there was no accessory phrenic nerve (figs. 5 and 2).

(4) In two cases, the nerve to the subclavius received a communicating branch from the main phrenic nerve before it divided into its two branches (fig. 4).

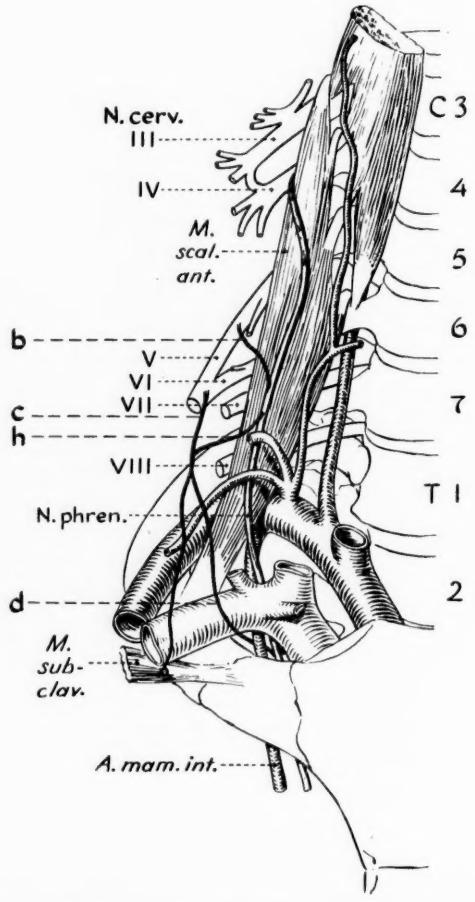

Fig. 4. Variations in arrangement. The fifth root branches promptly to join the nerve to the subclavius. The accessory phrenic makes a loop posterior to the internal mammary artery.

(5) In three instances, the nerve gave two accessory phrenic nerves—the upper and the lower, the upper joining the main phrenic nerve above the subclavius vein and the lower below the vein (fig. 10).

(6) In one instance, the nerve to the subclavius gave a small branch at the

lower border of the seventh cervical vertebra which transversed medially and ended in a ganglion at the lower border of the arch of the subclavian artery.

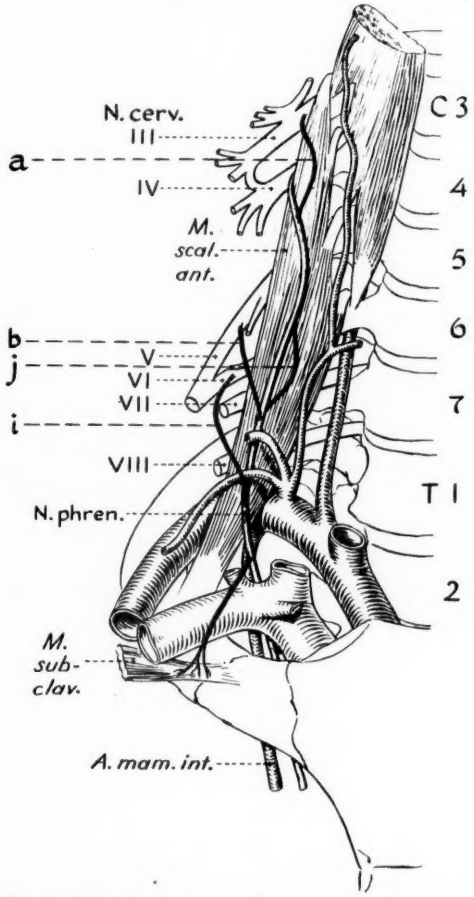

Fig. 5. Variations in arrangement. An accessory root crossing anterior to the transverse scapular vessels to the main phrenic trunk is derived from the sixth cervical. The subclavian nerve is given off directly from the main phrenic trunk.

There were no branches of communication from this ganglion (fig. 8).

(7) In one instance, the accessory phrenic nerve joined the third main root of the phrenic nerve, the nerve thus formed supplying the diaphragm independently of the fourth cervical root (fig. 7).

II. *The abnormalities of the accessory phrenic nerve:* The accessory phrenic nerve was present in 344 sides out of 406 sides dissected. This gives a per-

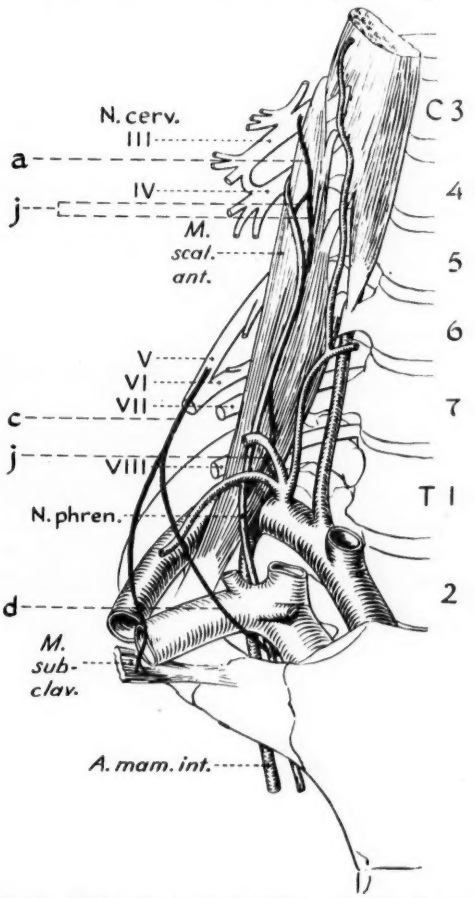

Fig. 6. Variations in arrangement. A network on the anterior surface of the scalenus is formed by the main phrenic trunk.

centage of 84. There is some difference of opinion as regards the incidence of the accessory phrenic nerve. Decker noticed the presence of the accessory phrenic nerve in only 30 per cent; Sauerbruch, 37.8 per cent; Aylock, 49.2 per cent; Matson, 60.4 per cent; Yano, 77 per cent; Goetze, 80 per cent. In my series, it was present in 84 per cent of

the cases. As I have already mentioned, I call the medial of the two branches of the nerve to the subclavius the accessory phrenic nerve and all other branches of communication to the main phrenic nerve accessory roots of the phrenic nerve. Some authors designate the accessory roots also as the accessory phrenic nerve. If I include the accessory roots also, the percentage of incidence of accessory phrenic nerve in my series would be 88 per cent. The following were the abnormalities in the accessory phrenic nerve:

(1) In twelve instances, the accessory phrenic nerve crossed the internal mammary artery posteriorly instead of in the usual anterior crossing (fig. 4).

(2) In three instances, there were two accessory phrenic nerves on each side—upper and lower—the upper joined the main phrenic nerve above the subclavian vein but crossed the transverse scapular vessels anteriorly, and the lower joined the main phrenic nerve below the subclavius vein (fig. 10).

(3) In two instances, the accessory phrenic nerve, instead of passing anterior to the subclavian vein, pierced it and formed a sort of a tunnel inside the vein before joining the main phrenic nerve. The nerve could be easily moved up and down this lumen in the vein without injuring it (fig. 9).

(4) In one instance, the accessory phrenic nerve joined the third main root of the phrenic nerve at the root of the neck and the nerve so formed supplied the diaphragm independent of the fourth cervical nerve (fig. 7).

III. *The abnormalities of the main phrenic nerve* were as follows:

(1) In one instance, the phrenic nerve was formed by two main roots only—the fourth and fifth cervical nerves. It received an accessory root from ansa hypoglossi (fig. 2). This branch reached the main phrenic nerve on the anterior surface of the scalenus anterior at the level of the sixth cervical vertebra. There was no main root from the third. Further, there was no accessory phrenic nerve in this instance, as the nerve to the subclavius was given off from the main phrenic nerve at the root of the neck.

(2) In one instance, the fourth cervical nerve formed the main phrenic nerve. The third cervical nerve, although present, did not join the fourth, but descended in close proximity to the fourth on the anterior surface of the scalenus anterior till it reached the superior border of the first rib, where it was joined by the accessory phrenic nerve. The nerve so formed descended and crossed the internal mammary artery posteriorly, descended farther independent of the fourth main root and supplied the diaphragm separately (fig. 7).

(3) In two instances, the main phrenic nerve was formed by the third, fourth and fifth cervical nerves but the fifth root did not join the main phrenic nerve till it reached the level of the first thoracic vertebra, where it joined the main phrenic nerve. During its course, the fifth main root crossed the transverse scapular vessels anteriorly, thus making a loop with the vessels. There was, in addition, an accessory phrenic nerve (fig. 3).

(4) In two instances, the fifth root, after joining the main phrenic nerve, continued only for a short distance and later some of its fibers separated as a bundle and joined the nerve to the subclavius. From the nerve to the subclavius, there was the accessory phrenic nerve. In this instance, the latter

made a loop with the internal mammary artery posteriorly, instead of an anterior loop, as in the majority of instances (fig. 4).

thus making a loop with them. In one of these cases, the nerve to the subclavius was given off, not from the upper trunk of the brachial plexus, but from

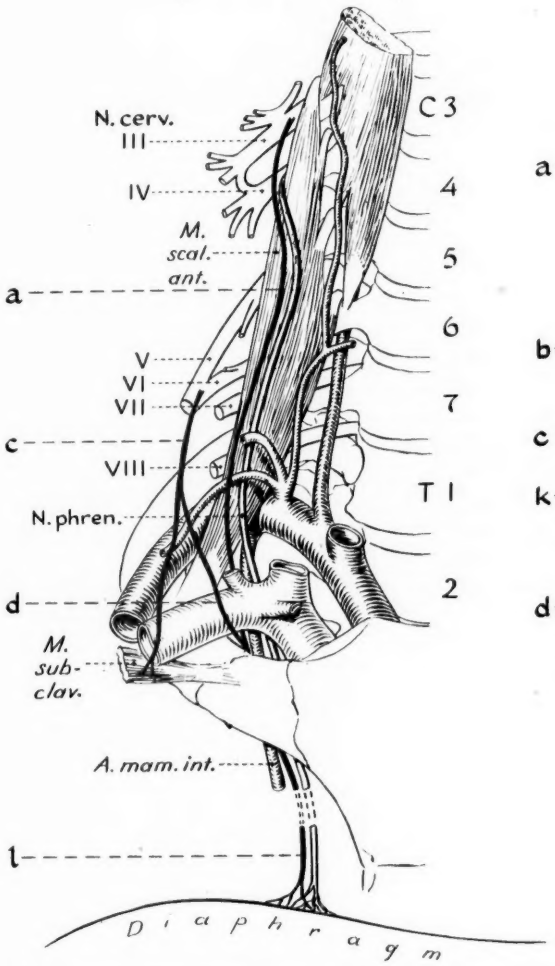

Fig. 7. Variations in arrangement. The third cervical root courses independently and is joined by the accessory phrenic. It supplies the diaphragm separately.

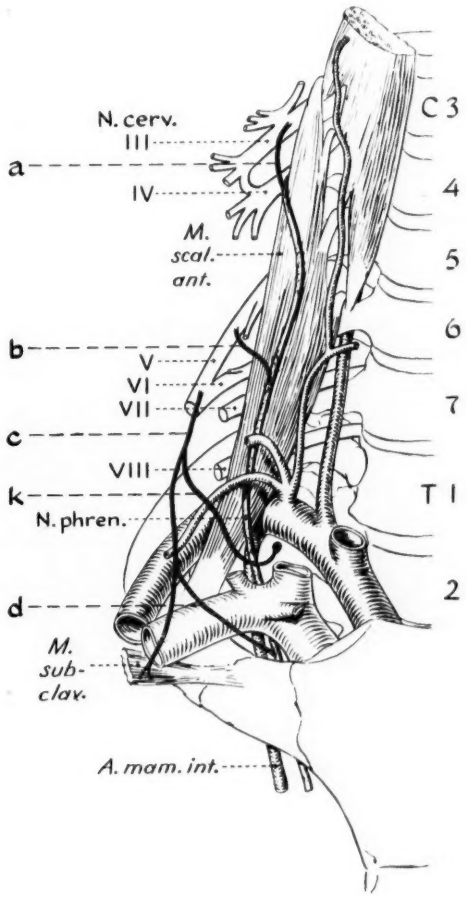

Fig. 8. Variations in arrangement. A branch from the subclavian nerve traverses medially and terminates in a ganglion.

(5) In four instances, the sixth cervical nerve gave off an accessory root of communication to the main phrenic nerve; in three of them, this crossed the front of the transverse scapular vessels, the main phrenic nerve at the root of the neck (fig. 5).

(6) In eighteen instances, the main phrenic nerve formed a network on the anterior surface of the scalenus anterior.

Sometimes, this network of nerves, derived from the third, fourth and fifth cervical nerves, pierced the muscle and appeared again on the surface (figs. 5 and 6).

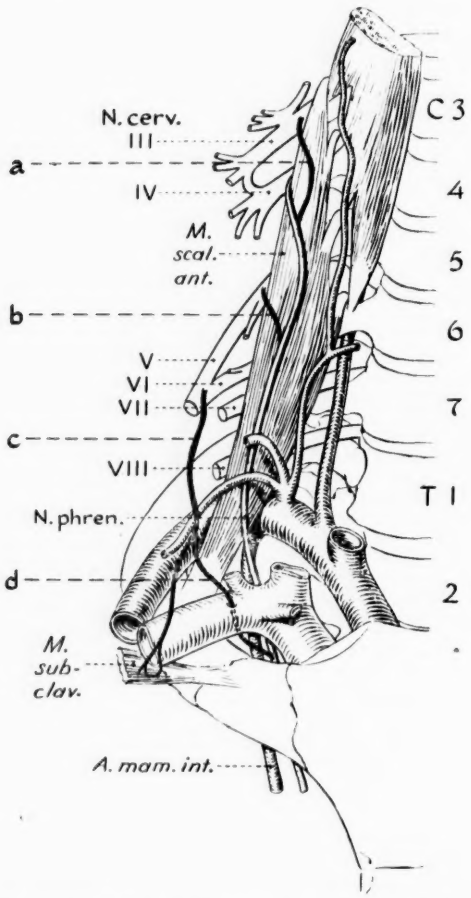

Fig. 9. Variations in arrangement. The subclavian vein is pierced by the accessory phrenic and a sort of tunnel is formed.

(7) In forty-eight instances, the main phrenic nerve was formed only by the third and fourth cervical nerves. There were no accessory roots but all of them had an accessory phrenic nerve.

SURGICAL CONSIDERATIONS

It is not my purpose here to deal with the details of the operation of phrenic nerve interruption. The last word on this subject has been written by John

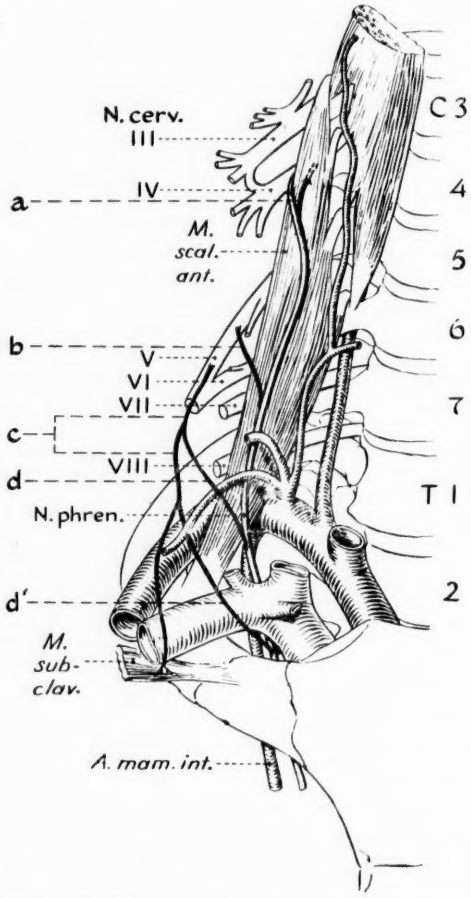

Fig. 10. Variations in arrangement. Two accessory phrenics are present passing anterior to the transverse scapular vessels and joining the main trunk respectively above and below the subclavian vein.

Alexander in his book, "The Collapse Therapy of Pulmonary Tuberculosis." I only mention the complications that are likely to arise and how to avoid them, with special reference to the ana-

tomical variations that I was able to discern.

It was Stuertz who, in 1911, first recommended the interruption of the phrenic nerve conduction in the case of pulmonary tuberculosis. But it was not usually appreciated by thoracic surgeons until 1932, when Felix with his brilliant experiments, expounded the good effects of the interruption of the phrenic nerve conduction in pulmonary tuberculosis. Depending upon the lesion and the condition of the patient, phrenic interruption is done either as a temporary or as a permanent measure. If the interruption is to be a temporary one, nerve crushing (phrenic emphraxis) or nerve cutting (phrenic neurectomy) is done, resulting in temporary paralysis of the diaphragm for about two to four months or longer. In cases where permanent paralysis is desired, a length of four to six inches of the phrenic nerve is excised within the thoracic cavity. In either case one must be sure that the accessory phrenic nerve and the accessory root of the phrenic nerve are also searched for and either sectioned or excised.

COMPLICATIONS

Pertaining to the relation and the distribution of the accessory phrenic nerve and the accessory roots of the phrenic nerve, complications likely to arise can be classified as:

1. Hemorrhage,
2. Air Embolism,
3. Damage to the sympathetic plexus,
4. Injury to the apex of the lung and
5. Injury to the thoracic duct.

If the accessory phrenic nerve is piercing any of the vessels at the root of the neck, or making a loop with them, there is likelihood of injury to the vessels, resulting in severe hemorrhage and air embolism. In such cases, control of hemorrhage by pressure over the area is paramount and next, to extend the incision widely, catch the blood vessels that are bleeding both proximally and distally, and ligate them without delay. Delay may not only produce severe hemorrhage but what is much more severe, air embolism.

Damage to the sympathetic nerves may be produced in cases where the phrenic nerve receives communicating branches from the sympathetic and usually results in Horner's Syndrome.

If the thoracic duct is injured, there will be a milky or pus-like discharge oozing from the cut ends. In such cases, the two ends of the vessels must be ligated. The chyle is carried by anastomotic channels.

If one is familiar with the anatomy of the part and keeps a cool head and a bold heart, any complications that may arise may be surmounted without much difficulty.

SUMMARY

The circumstances leading to the study of the phrenic nerve and the branches of communication and distribution of the phrenic nerve on 203 cadavers are described in detail. Based on these dissections, the phrenic nerve, the accessory phrenic nerve and the accessory roots of the phrenic nerve are described with special reference to their origin, course, relations and distribution. The surgical consideration of phrenic nerve interruption, with special reference to the abnormalities detected, is briefly mentioned.

SOMMAIRE

Les circonstances que amorcérent l'étude du nerf phrénique de ses branches de communication et sa distri-

bution sur 203 cadavres sont décrites en détail. Se basant sur ces dissections le nerf phrénique, le nerf phrénique accessoire, les racines accesoires du nerf phrénique sont décrits surtout en rapport avec leur origine, leurs rapports et leur distribution minutieusement. Les considérations chirurgicales de l'interruption du nerf phrénique et aussi les anormalitiés observées sont mentionnées brièvement par l'auteur.

RESUMEN

Se describen en detalle las circunstancias conducentes al estudio del nervio frénico y de sus ramas de comunicación, analizándose la distribución del frénico en 203 cadáveres. Basándose en éstas disecciones se detalla el curso del nervio frénico, del frénico accessorio y de las raices accessorias del frénico haciéndose especial mención del origen, relaciones y distribución de éstas estructuras anatómicas. De un modo breve se referiere el autor al aspecto quirúrgico del bloqueo del frénico con especial referencia a las anormalidades encontrandas.

Свод

Подробно описаны обстоятельства, приведшие к изучению nervus phrenicus, его сообщающихся ветвей и их распределение в 203 трупах. На основании этих ризсекий дано описание nervus phrenicus accessorius и его добавочные корни, особенно в отношении происхождения, путей и распределения. Кратко упомянуты хирургические соображения перерыва nervi phrenici, особенно в связи с найденными ненормальностями.

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Prostheses for the Nose

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THE nose, being a prominent organ, is one of the most common structures requiring replacement with a prosthesis. Since it is also one of the most simple of organs to restore prosthetically, it deserves a detailed exposition, insofar as the technic for construction is concerned.

The first step, as with all prostheses, is to make a negative impression of the face. The patient is prepared in a semi-reclining position, in a quiet, clean room. The face is draped to protect the clothing. The nasal cavity is lightly packed with cotton; the patient is instructed to breathe gently by mouth. The eyebrows and eyelashes are lightly coated with petroleum jelly. The friable, sensitive tissues about the borders of the defect are also coated with the lubricant.

The impression may be made from any of several materials—alginate compounds, gelatinous thermoplastic compounds, or plaster of Paris (gypsum). For defects with marked undercuts in the tissue, the gelatine or alginate compounds are the most desirable. For most impressions plaster of Paris is preferable. A relatively soft type is best, such as No. 1 moulding plaster.

A 6-inch rubber bowl is half filled with cold tap water, and enough plaster sifted into it to absorb most of the water, with an "island" of dry plaster projecting upward through the liquid. This will result in a mixture of just about the right consistency for the purpose. This is left to stand for a minute, and is then spatulated to a creamy consistency. It is then ready to be coated upon the face. We prefer to spread it on with a spatula, although for the first coat a brush may be used by those fearful of air bubbles. It is spread in such a way that the plaster literally *flows* over the face, with the spatula used merely to direct the flow. After the face is covered, the remaining plaster is scooped up and laid over the first coat to thicken it for reinforcement. For a

Fig. 1. Surgical ablation of nose.

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nasal prosthesis, the greater portion of the face should be reproduced, so that the restoration may be sculptured with due attention to the proportions of the face. The mouth is left free, of course, for breathing. Once the plaster has set, the hardened impression is removed from the face; generally the cotton nose packing comes off attached to the plaster.

The patient is allowed to wash, is re-bandaged and asked to return in a few days. If he possesses any old photographs or snapshots, the operator should ask for these. They help to design the sculpture of the new nose; this in itself is an encouragement for the patient.

Now the inner surface of the impression is coated with one of the following:

a. Petrolatum jelly
b. Soap solution
c. Commercial separating compound

Fig. 2. Positive plaster cast of face with deformity.

A wall of clay or modelling compound is built around the impression; it is filled with a plaster of Paris mixture, made as before, except that this time hydrocal (hard plaster-alpha gypsum) is used instead of moulding plaster. Once this has set, the impression is separated from it by wedging it off.

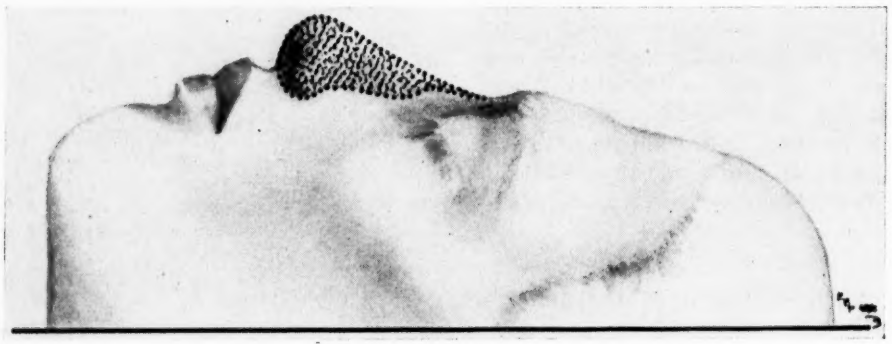


Fig. 3. Nose restored by sculpturing in clay.

The negative impression is now discarded. What remains is a positive impression of the face as it exists with its deformity, executed in hard gypsum (Fig. 2).

It is upon this plaster likeness of the deformed face that the restoration is to be sculptured. In sculpturing a nose, the greatest help to the operator is that he have something of the artist in him. A realistic likeness can be created only by one who can observe nature carefully, and who has trained himself to reproduce and interpret nature, in this case by means of sculpture. However, lack of artistic talent should not prevent the physician from attempting the sculpture. He is well-trained in the art of skillful observation; this, coupled with "a feeling for the clay," should help him to execute the necessary reproduction of the missing part.

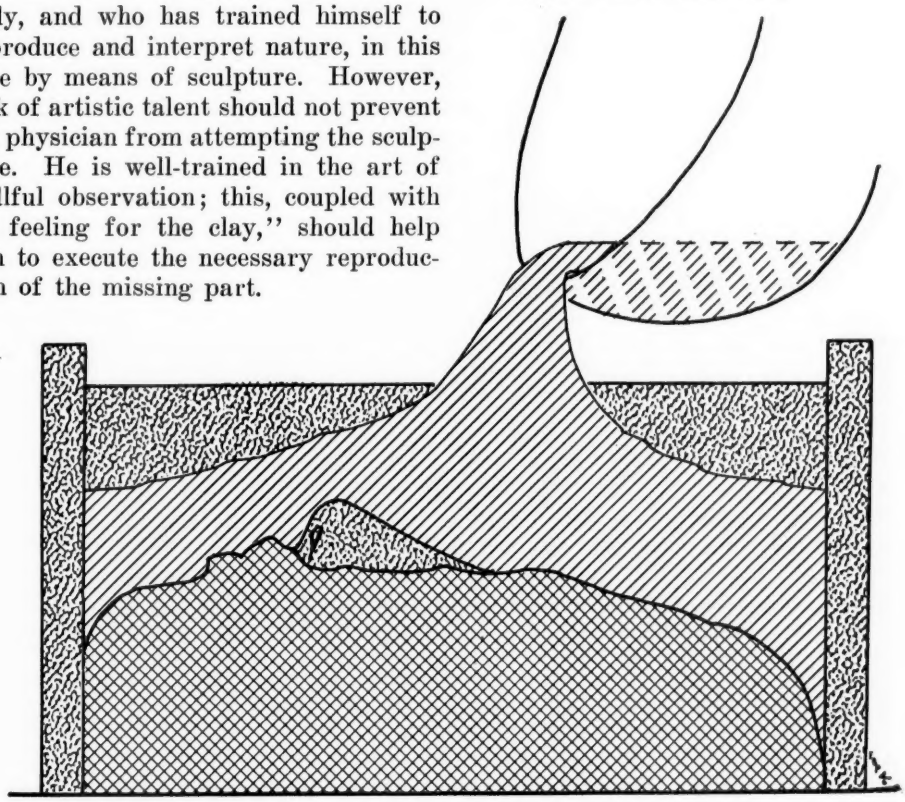


Fig 4. Two-piece mold completed by pouring additional plaster over the ensemble.

TOTAL NASAL AMPUTATIONS

If the entire organ is missing (Figs. 1, 10, 12), the sculpture is relatively easy. It should extend far enough so that the clay covers some *healthy* skin around its entire circumference. In short, a prosthesis must rest upon, and have contact with, only healthy tissue.

There are certain folds and grooves about the nose which help to conceal the edges of a prosthesis if one is able to carry the restoration exactly to these points. These are:

1. The root of the nose
2. Between the eyebrows, the medial, inferior edges of the orbit
3. The nasolabial folds
4. The lateral rims of the alae
5. The philtrum of the upper lip

A prosthesis which we have found to be the easiest to conceal (as illustrated) is one which meets, but does not go beyond, these points.

That it is cosmetically wise for these points, if possible, to be met by the edge of the prosthesis is easily demonstrated.

1. The root of the nose is readily con-

cealed by the nose piece of eye glasses, as is the

2. Orbital rim, which may be concealed by the lens frame.
3. The nasolabial folds are natural grooves and offer a hard-to-detect

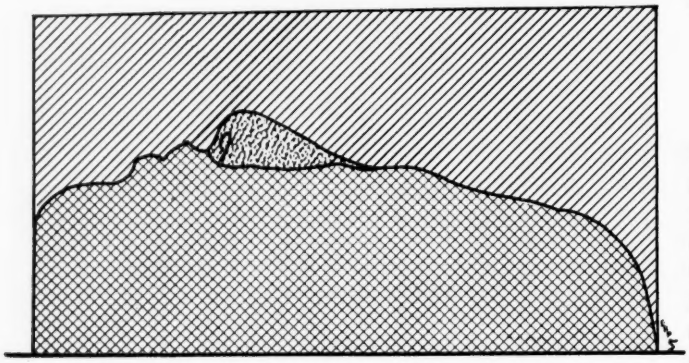


Fig. 5. The two-piece mold containing clay sculpture.

border for a prosthesis.

4. The lateral rims of the alae offer definite, indented borders to conceal the edge of a prosthesis.
5. The philtrum or groove of the upper lip reaches up almost to continue itself as the columella. Its plane changes, however. The surface of the philtrum is a vertical groove; the columellar skin surface is convex. Where they meet is the best place for the prosthetic nose and lip to meet.

Thus a prosthesis sculptured accurately to meet the above discussed points has the best chance for concealment of its boundaries (Fig. 3).

It will be found sometimes, that an interim prosthesis is necessary. Too often a prosthesis is made for an anxious or impatient individual, and after a few months the host area about the amputated site has shrunk so that the prosthesis no longer fits accurately. Such a prosthesis will have to be made over entirely, after a new impression of the face with its shrunken dimensions is made.

PARTIAL NASAL AMPUTATIONS

Sometimes the surgeon finds it advisable to remove only a portion of the nose, especially in those cases where future plastic surgical reconstruction is indicated. Such cases offer complications in making prostheses (Fig. 11).

When one lateral half of the nose is excised, the remaining muscles of expression of the unoperated side tend to pull the remnant of the nose away from the operated area laterally. One may assume that the remaining transversalis muscle tends to exert enough traction

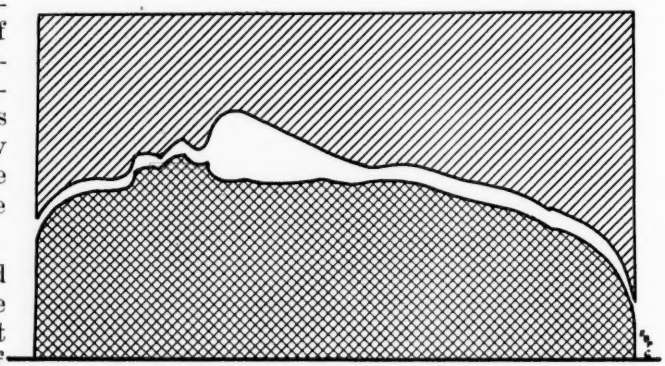


Fig. 6. Mold separated and clay washed out.

to pull the undamaged half of the nose away from the midline. The upper portion, or root of the nose, does not show this effect, because of its osseous foun-

dation. Thus, the lower half of the nose, after operations such as described above, is pulled off center and creates a problem for the prosthetist in that he must not only restore the missing portion, but must also somehow create the effect that the restored nose is in the midline and symmetrical.

In sculpturing this restoration one cannot attempt to bring the remaining portion of the nose back to the midline by using the restoration as an anchor. The idea is good, but is seldom successful. The tonicity of the nasal muscles, as feeble as they are thought to be, is enough, during a few hours, to pull the nose back to its distorted position. It is more practical to sculpture the restoration so as to cover the distorted portion at the same time that it restores the absent portion. This makes the artificial nose larger than the original, but nothing better has yet suggested itself.

When the central mass of the nose is removed, leaving portions of one or both alae, the muscles of expression which insert along the alar cartilages cause complications. These muscles are the *dilator naris anterior* and the *dilator naris posterior,* as well as the *depressor alae nasi.* The *compressor narium minor* is generally destroyed by nasal tip ablations. These alar muscles of expression, left unanchored because their medial insertions are now movable cartilages, exert traction upon the now mobile alar remnants.

Three reasons for this phenomenon suggest themselves to the writer:

1. The normal tonicity is altered since ordinarily the bands of the sarcostyles of the muscle mass "spell" themselves and this tension depends somewhat upon the tonicity (therefore the pull) of their opposite partners. This normal resistance to the traction of the alar muscles is absent, of course, after surgical ablation, permitting the muscles greater contraction.

2. The alae are quite firmly attached to the nasal tip normally, because of the continuity of the alar cartilages with the crural and columellar cartilages. After nasal tip destruction, the alae become mere stumps, free at their anterior edges.

3. The surgery for removal of the nasal tip is generally with electrocoagulation. Bleeding of the remaining edges is also controlled by the same agency. Not always are mucous membrance and skin sutured together at the wound edges. It seems reasonable that nerve endings here are more sensitive for this reason: they are more exposed, being covered only by thin scar, therefore more irritable.

These three factors are enough, I feel, to account for the bizarre movements of the alar stumps. Prostheses should be sculptured to cover the alar remnants entirely to conceal this movement.

SCULPTURE OF THE NOSE NEAR THE UPPER LIP

Sculpture of the nose should be so executed that the restoration will not entirely encircle the nostril opening. This is suggested for two reasons:

1. It results in a more normal appearance.

2. The patient will be able to feel mucus and moisture at the nasal

orifice if this vestibular skin is left uncovered.

However, if the upper lip is destroyed (Figs. 13, 14), the prosthesis should restore this part. If the destruction is enough to interfere with the retention of saliva, the prosthesis should be shouldered snugly on the bordering skin, fitting closely enough to wall in the saliva. Salivation is one of the greatest discomforts to the patient with lip destruction; the skin of the chin, constantly exposed to contact with saliva, becomes a weeping, irritated surface.

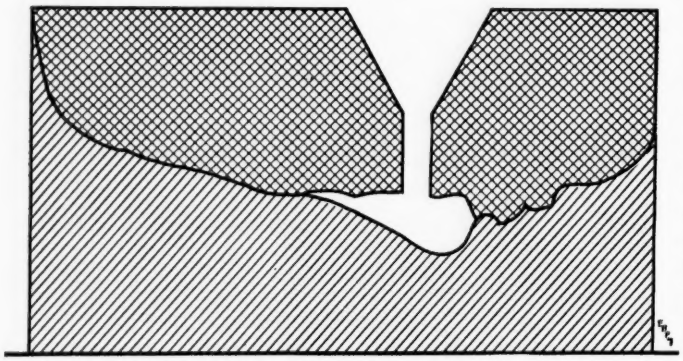


Fig. 7. Pouring channel is cut through posterior portion of the die and counter die.

Once the sculpture is finished it may be gently pried away from the plaster positive, and tried on the face of the patient, for position, size and esthetic effect. It is then replaced on the positive cast, and the mould is finished by walling the cast with clay and investing the exposed sculptured nose with more alpha gypsum (Figs. 4, 5). The two halves of the mold are now separated, the clay washed out (Fig. 6), and the pouring channel drilled in through the posterior half of the mold (Fig. 7). The pouring channel is used if the nose

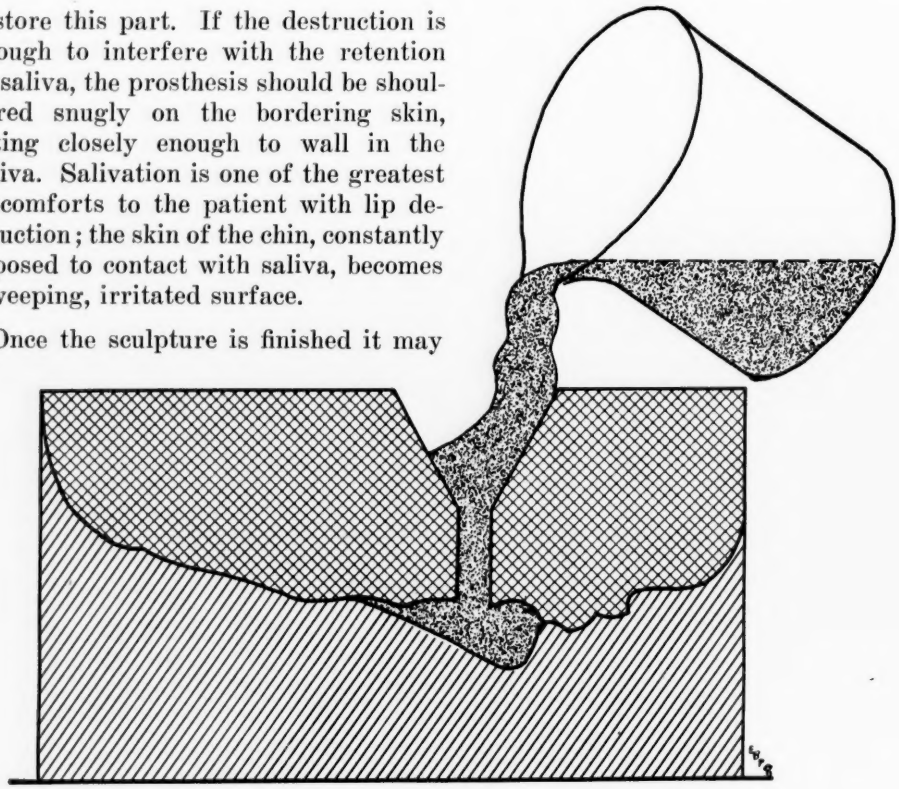


Fig. 8. Suitable colored latex compound is poured into the mold.

is to be cast in a latex dispersion. This is the usual practice. (*See note below.*)

The latex, a commercial preparation, is altered by adding approximately 1 to 3 per cent zinc oxide, titanium dioxide or other "whiting." This acts (like house paint) as a covering to disguise the amber hue of the latex and to act as a spreading agent for the flesh hues which should be added to the latex before pouring.

Some of the most useful coloring agents for latex dispersions are:

Rose Lake 10132.....(Sherwin Williams)
Sudan Orange RRA.....(General Dyestuff Corp.)
Vulcan Fast Red BA.....(General Dyestuff Corp.)
D & C Red #33.....(Kohnstamm Co.)
Flamingo Red K7269.....(Kohnstamm Co.)
D & C Black #1.....(Kohnstamm Co.)
Gypsy Red K7210.....(Kohnstamm Co.)
D & C Red #10.....(Kohnstamm Co.)
D & C Brown #1.....(Kohnstamm Co.)

Note: If the nose is to be cast in vynil chloride or other heat cured plastic, no pouring channel is indicated.

Fig. 9. Surgical ablation of nose with prosthesis.

Figs. 10a. Traumatic loss of nose. 10b. With prosthesis.

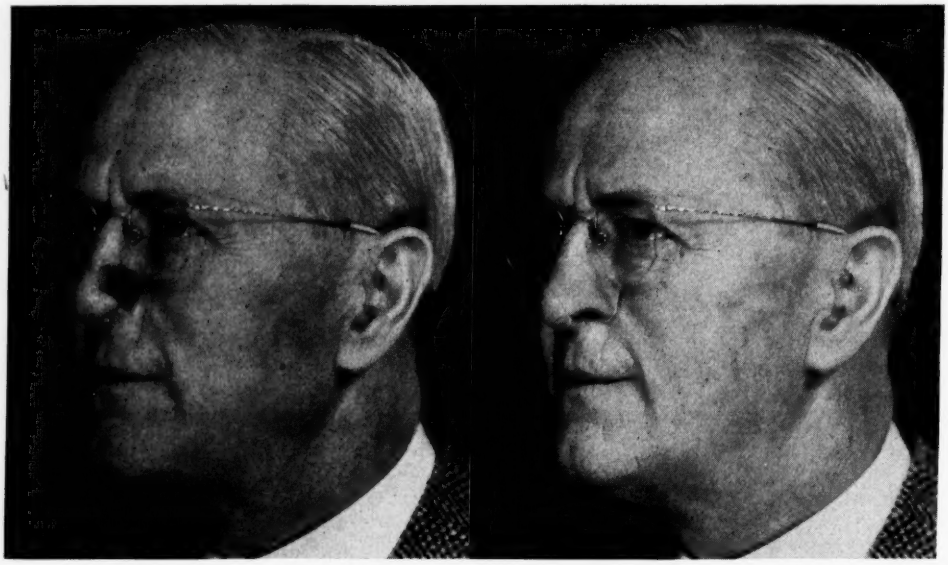
Regardless of their solubility they are kept in the laboratory stock as powders and used in 3 per cent mixtures or solutions, in ammoniated distilled water. We have found it best to keep them in 2 ounce dropper bottles, since generally a few drops are enough to color the amount of latex necessary for the average facial prosthesis.

We have adopted the mechanical mixer or agitator to mix the whitening and coloring agents with the latex dispersion, as it seems to produce a much more uniform color, tends to destroy color specks and pigment or rubber solids agglomerations. The rubber mix is then permitted to stand a few minutes to allow the air bubbles created by agitation to collapse. Just before pouring the mold, the latex mix is gently stirred with a rod.

The plaster die and counter die should be dry before pouring takes place. One may dry the plaster in an oven, but if it is heated for any length of time over 125° C. the gypsum becomes chalky, crumbly and useless.

The latex is sampled for color by applying a few drops upon a plaster of Paris slab. Upon drying a fair preview of the color result can be obtained by inspection of the plaster side of the rubber specimen.

Once this color is satisfactory, the latex is gently poured into the assembled die and counter die (Fig. 8). Prevulcanized and self curing, the latex requires one or two days at room temperature to coagulate and set completely. Cure may be hastened by placing the mold in an oven heated to between 100° C. and 125° C. for 10 or 12 hours.



Figs. 11a. Ablation of portion of nose for carcinoma. 11b. With latex prosthesis.

When the parts of the mold are separated, the prosthesis will be found to have a fine flashing at the seam lines of the mold. This is cut away with

scissors or ground off with a granite stone on the dental engine.

The powdery surface is scrubbed with soap and water. The prosthesis is then dried and is ready to be tried upon the patient.

It is almost useless to try to "doctor up" the color of the prosthesis if the color match with the patient's skin is poor. It is really easier to discard the prosthesis and recast it with a color corrected mixture of latex.

Now the alar edges of the restoration should be inspected to ascertain if there is perfect contact at exactly the edge of the nasolabial groove. Movements of the alar stumps of the ablated nose should not dislodge the prosthesis. Talking, chewing, laughing, should not move the prosthesis out of position. The patient should be able to wear the nasal prosthesis with or without glasses. Either way, the glasses do not support the prosthesis. The restoration, like

Figs. 12a. Congenital absence of nose with loss of vertical dimensions of middle third of face. Note absence of index finger which was sacrificed in one of the surgical attempts to restore the nose.
12b. With latex compound restoration.

Once the color match is satisfactory, an adhesive (of gum mastic in ether) is applied to its contact surface. The adhesive should not be painted too near to the edge of the prosthesis. It causes gumminess and attracts dirt. In a few minutes the mucilage becomes tacky. The prosthesis is placed in position on the dry skin and, if properly fitted, should become well fixed in a few moments (Fig. 9).

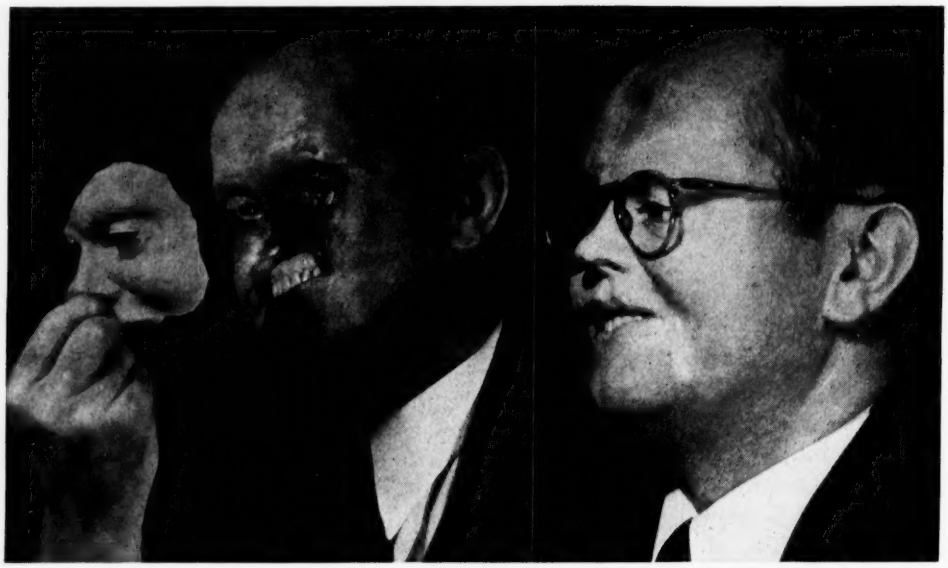
the normal nose, should be fixed strongly enough to support the glasses.

All of these factors must be kept in mind by the operator. Add to these meticulous demands the uncertainty of various latex mixtures, the vagaries of tints, dyes and pigments, and the almost frantic desire of some patients quickly to assume the anonymity of normality, and it becomes easy to perceive why few surgeons care to do this often exasper-

Figs. 13a. Complete loss of nose and upper lip through use of an arsenic paste. 13b. With latex restoration.

ating work. But the gratitude of these patients is a great reward indeed. To change these revolting deformities which are beyond the cure and care even of present day plastic surgery, back to

(Continued on page 76)



Figs. 14a. Complete loss of center portion of face including eye. Diagnosis: tertiary syphilis. Nasal prostheses involving lip are among the most difficult to produce. 14b. Prosthesis about to be applied.

Operative Technic for External and Internal Strabismus

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IN ascending the phylogenetic scale we find that there is a gradual loss in the panoramic vision, a gradual convergence in the vision. There must be changes, during this developmental picture, in the retinae, the maculae and foveae or a change from protopathic to epicritic sensibility.[1]

The images from the two visual fields reach the brain, fusion of the same takes place, minute discrepancies in the images, as seen by the two eyes, are amalgamated into one fused image and stereoscoped into three-dimension visual sense. This binocular stereoscopic vision calls for highly perfected accuracy in adjustment of the entire complexity of the eye and all of its components.[2]

The integration of this process with its accompanying coordination and accommodation must reach into the realm of the proprioceptive nervous system. Any fault or defect in this highly complex mechanism will result in a disintegration, and a subsequent maladjustment or malformation will ensue. The intricate coordination involved in the conjugate movements of the eyes, which is essential for the maculae and foveae, and the ability to see stereoscopically, thus adding a third dimension to spatial discrimination, is of inestimable value to the whole human process.[3]

Monocular people do not possess these faculties; by the same token, interference with their daily objectiveness takes place and they employ monocular fixation. Good vision may exist in either eye without fusion or an alternating type may be found. This may be convergent or divergent.

Accommodation is a reflex act; the innervation is binocular and is equal in both eyes (Hering's Law). Therefore accommodation is uniform in each eye; i.e., it is the same or uniform in the whole circumference. Hess, Luedde, Duke-Elder and Lancaster are all positive in their opinions on this subject.

Ocular motility: "The oculomotor system which governs the movement of the eyes and, to a large extent, regulates and influences the coordination of the whole body, is a system of considerable intricacy and of extreme clinical importance" (Duke-Elder).[4]

There are six extra-ocular muscles for each eye. The functions of these muscles are as follows:

Median Rectus: chief adductor; with lateral rectus helps stabilize eye in elevation and depression. In parallel movements, adducts; in non-parallel movements, it chiefly converges.

Lateral Rectus: chief abductor; with medial rectus, helps stabilize eye in elevation and depression. In parallel movements abducts, in non-parallel movements, acts chiefly in divergence—outward of both eyes simultaneously.

(Adduction and abduction are excursions of each eye in parallel movements. In looking right, the right eye abducts, the left eye adducts. These movements are greater than those of non-parallel movements of convergence and diver-

gence. In convergence, the eyes rotate medially to a fixed point. There is normally little ability to diverge.)

Superior Rectus: the maximum elevating effect is obtained when the eye is abducted about 27°. In adduction, the elevating effect is much reduced; it acts as an adductor and an internal rotator of the vertical meridian.

Inferior Rectus: the maximum depressing effect is when the eye is abducted 27°. When the eye is adducted, its depressing effect is much reduced, it acts as an adductor and external rotator of the vertical meridian.

Superior Oblique: the maximum depressing effect is when the eye is adducted about 50°. When the eye is abducted it assists in the outward rotation and acts as internal rotator of the vertical meridian.

Inferior Oblique: maximum elevating effect is when the eye is adducted about 50°. When the eye is abducted it assists in the outward rotation and acts as an external rotator of the vertical meridian.

Sherrington's Law: "A contraction of one muscle, or group of muscles, is accompanied by simultaneous and proportional relaxation of the antagonist or antagonists."

The insertion of the four recti muscles is of significance in muscle surgery. The medial rectus is 5 mm. from the corneal margin, inferior rectus 6 mm., the lateral rectus 7 mm., the superior rectus 7½ mm. (There is approximately a 1 mm. gain in the distance from the limbus to the insertion beginning with the medial, then inferior, lateral and superior.) The distance then to the equator of the eye ball from the insertions is: medial 6 mm., inferior 5 mm., lateral 4 mm., superior 3½ mm.

TENDON INSERTION

Med. Rect. is	5	mm. from limbus.
Inf. Rect. is	6	mm. from limbus.
Lat. Rect. is	7	mm. from limbus.
Sup. Rect. is	7½	mm. from limbus.
Med. Rect. is	6	mm. from equator.
Inf. Rect. is	5	mm. from equator.
Lat. Rect. is	4	mm. from equator.
Sup. Rect. is	3½	mm. from equator.

Strabismus is defined as a faulty relative position of the eyes which prevents the lines of gaze of the two eyes from intersecting at the point of fixation. If the faulty relative position of the eyes is such that the non-fixating eye is relatively more adducted, we are dealing with convergent strabismus, if the non-fixating eye is more abducted it is divergent strabismus.

If one of the eyes is deviated constantly and does not assume fixation, it is strabismus; if either eye is used for fixation, although one may be preferred, the strabismus is alternating.[5]

If the right eye is higher than the left, such a position of the eyes in the nomenclature of Hering and Bielschowsky is called a positive vertical divergence (+VD), or, according to the terminology used in the United States, a right hyperphoria or hypertropia; the opposite condition, i.e., when the left eye is higher, is termed a negative vertical divergence (—VD) or left hyperphoria or hypertropia.[6]

A phoria is not a manifest strabismus; a tropia is a manifest strabismus. A manifest strabismus is periodical if present only at certain times; or permanent if it is always present. The amount of strabismus, whether convergent, divergent or vertical deviation, is measured by arc of deviation. This is the angle subtended by the visual line and the line of direction of the retinal element on which the fixation point is imaged. If a convergent squint is present, the image of the fixation point lies

nasally from the fovea of the deviated eye; if the strabismus is divergent, the fixation point is imaged on the temporal part of the retina.

If the amount or angle of strabismus within the physiological limits is the same in all directions of gaze, the deviation is termed a concomitant one; beyond the physiological limits a difference in the angle of squint in different directions of gaze indicates a weakness of one or more eye muscles; such a deviation is called a paralytic squint.

DETERMINATION OF THE OPERATION OF CHOICE IN "SQUINT"

To follow a stereotyped procedure in every case of squint is inviting destabilization and trouble. In a case of insufficiency of the deviating muscle, it is unwise to recess. One must view each case with deliberation; careful computation and survey of all the conditions present should be the approach to determining the operative procedure.

Dr. Alexander Duane, Dr. James W. White[6] and Dr. A. Bielschowsky[7-14] have most adequately covered this entire field; their writings are worthy of continued and careful perusal.

By far the largest proportion of hypertensed, hyperacting or hyperinnervated muscles are found on the converging side; hence, it is desirable to determine the following factors before selecting the operation:

1. Near point of convergence. Dr. Duane states that the "converging near point (C.P.) remains as our most reliable means of determining the actual converging power." We are indebted to Dr. White for emphasizing this procedure. If, in a case of esotropia, the eyes converge synchronously to a point 60 mm. or less, the C.P. is said to be normal or better than normal. If one of the converging muscles falters as the pin approaches the eyes, and cannot adduct to the 50 mm. point as evidenced by its giving up the effort and turning out, the convergence near point is said to be remote. In the first instance above, the converging system (the medial recti) are strong; the second, favors an underlying and sometimes unsuspected insufficiency of the interni.

2. The relative prism measurement for nearness and distance. If the degree of deviation for nearness is in excess of that for distance, this points to hypertension or hyperactivity on the deviating side, or the medial recti.

3. Excursion. If, when tested, excursion (internal) is vigorously accomplished, the cornea being rotated without faltering, well under the semilunar fold, this further confirms hyperactivity of the converging system.

4. Fascial Tension. If, after thorough exposure of the muscle at the time of operation, fascial tension is demonstrated, diagnosis is confirmed.

External deviation may not require as close interrogation as internal deviation.[15] There is a more passive quality in the lateral (external) recti. The advanced tuck is nearly always necessary when the deviation is over 15° of arc deviation.

ANESTHESIA IN EYE MUSCLE SURGERY

In young adults and adults, local anesthesia and topical application gives excellent results, but pulling on the muscles of the eyes causes some pain. I use the O'Brien and Van Lint akinesia with a 1 per cent procaine with epinephrine solution; injecting 1 cc. in front of the tragus, and 1 cc. 1 cm. lateral to the external canthus. This is fortified by retrobulbar injection into the muscle cone and local instillation of pontocaine or

butyn. If there is any discomfort a small injection into the belly of the muscle to be operated on is indicated.

Sodium pentothal has been used advantageously; in children ether insufflation is necessary. If a general anesthetic is administered, the eyes will naturally be rotated upward and outward, so that if the eyes are parallel on completion of the operation they will almost certainly converge when the effect of the general anesthetic has passed. When local anesthesia is used, there is disturbance of direction due to partial paralysis of the muscles from nervous block and weakening from trauma due to stretching and instrumentation.

From the foregoing it is readily understood that the amount of advancement or recession necessary must be determined by the operator prior to any surgical interference.

tion by scleral suturing should be practiced. The operation is an equatorial scleral fixation procedure.

1. *Position of the primary incision.* It is made anterior to the semilunar fold, not over the insertion of the muscle, because the conjunctiva, if the incision is made over the insertion, will not stretch to the point of the recessed muscle but will tear out; moreover, it is a great advantage to have the conjunctival opening directly over the scleral sutures; this facilitates drainage and prevents tissue reaction.

2. *Conjunctiva dissected well back to the limbus.* This exposure is of inestimable value, as together with the operative findings and preoperative findings in the case, the actual inspection of the muscle and fascia add much to our understanding of proper gradation and procedure.

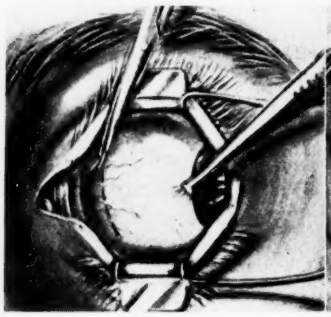

Fig. A. **Tendon Recession:** Vertical incision is made in conjunctiva anterior to semilunar fold, directly over scleral sutures. Conjunctiva dissected well back to limbus.

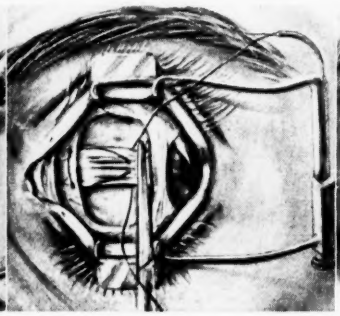

Fig. B. Isolation of muscle by flap dissection; non-stripping to preserve outlying fibres. Threads pass through tendon close to attachment—one above, one below —emerging under tendon. Tendon severed.

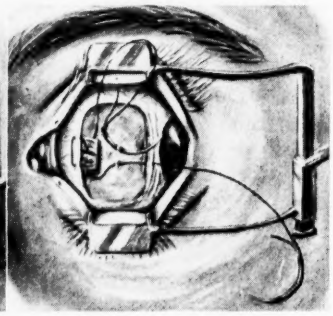

Fig. C. Definite anchorage, using ten-day atraumatic chromicized catgut. Recession point is determined, direct scleral sutures teased through sclera, then through conjunctiva. Either tied or closed with running suture.

In tenotomy, recession brings the recognition of the equatorial boundary, greatly stabilizing results, and with the recognition of destabilization which follows when the muscle end in front of the equator is disregarded, definite fixa-

3. *Isolation of the muscle by flap dissection.* By this is meant the nonstripping of the muscle so that by the wide flap, its outlying fibres are preserved and it is left as far as possible in continuity with its adjacent tissue. This

preserves innervation and vascularization and conserves convergence.

4. *Diverging incisions which outline the flap.* These are carried well back of the equator. Smooth, perfect adjustment is accomplished by them. With recession, the lip of the incision nearest or adjacent to the muscle becomes shortened, that furthest from the muscle elongated. These adjustments take place as the eye swings out to correction.

5. *Definite anchorage.* This is the securing of the muscle end to the desired recessed position by direct scleral suture and ligation.

Recession corrects the deviation by relaxing the deviating muscle. This may be termed correction by direct relaxation. The fascial considerations are of importance for they are considered with reference to the capsule; fascial prolongations from it are exceedingly important. (See Figs. A, B, C, and K.)

For a number of years, I have used catgut (10 day chromicized 000 or 0000), finding it superior to silk and its subsequent removal not being necessary. I use atraumatic needles which add delicacy to the operation, and give confidence to the operator. The above 000 catgut has a tensile strength of 1½ pounds, a plentiful reserve strength.

The muscles of the eye (external) are small, delicate and friable with tendons which are not too wide. Any resection, lateral or medial, is fraught with some hazard when the muscle is severed from its attachment and advanced to the limbus.

Figures D, E, F, G, H, and J illustrate the O'Connor cinch operation, a modified tucking operation which is becoming more popular throughout the United States.[16] A vertical cut is made in the conjunctiva, the capsule of Tenon opened, and the tendon exposed; the tendon is then separated into four strands beginning at its insertion and extending back into the muscular part. (At times it may be divided into only three strands.) If in four strands, the muscle is split in the middle with the point of a sharp knife, then, with scissors, is split back into the belly of the muscle by slow, careful, blunt dissection; then each half is again split and the

Fig. D. Retrobulbar injection: Horizontal section through the orbit, showing position of the needle. *O*, optic nerve; *g*, ciliary ganglion.

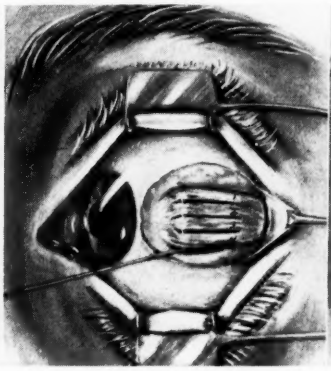

Fig. E. **O'Connor Cinch:** The muscle is exposed and divided into four strands. Figures F, G, H, and J illustrate further steps in O'Connor cinch.

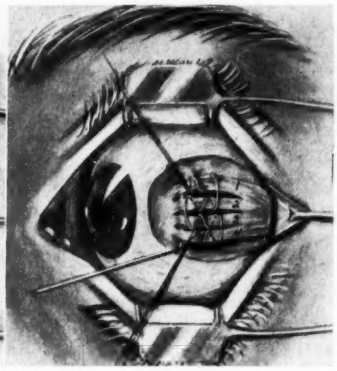

Fig. F. Blunt-pointed tonsil needle with dermal sutures passed between 1 and 2, back of 1, then in front of 1 and 2, between 2 and 3, back of 3, emerging between 2 and 3, in front of 3 and 4, underneath and back of 4, emerging on its upper edge and down in front of 4.

same procedure followed. A blunt-pointed tonsil needle with several strands (eight or ten) of dermal (non-absorbable) suture threaded through the eye is passed between the first and second strands under the first, emerging over the border of the tendon and then

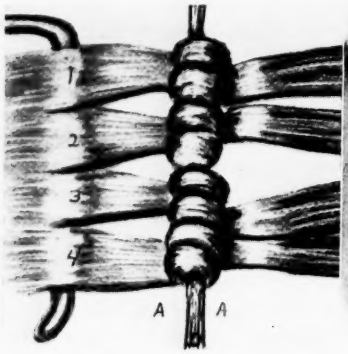

Fig. G. Shortening shows strands being folded over strands of dermal suture material. Loops of dermal transferred to muscle by pressure on lower edge of muscle at *A-A* while dermal *D* is drawn straight.

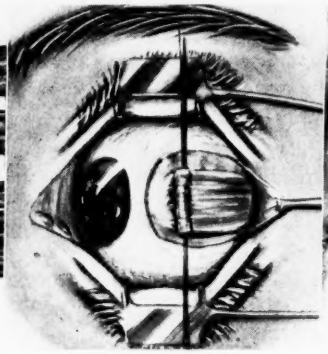

Fig. H. Tendon hook removed, dermal suture material pulled taut, conjunctival closure ready.

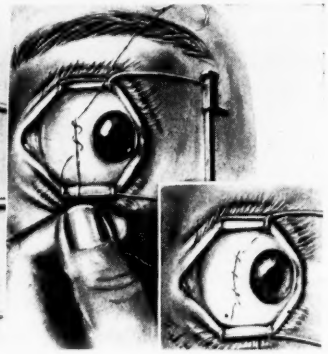

Fig. J. Conjunctival closure showing single running untied chromic absorbable suture. Healing and union take place readily.

under and around the first strand again. It then goes between the second and third, and under the second, and emerges between the first and second, and again between the second and third, under the second, and emerges between the first and second. In like manner it is wound around the third band of fibres and then the fourth.

The two ends of the cable of dermal suture strands are then tightly stretched with the two hands, whereupon the cable becomes straight while the tendon bands wrap themselves around the tight cable instead of the cable being wrapped around them. The ends of the dermal sutures are cut and placed in the upper and lower cul-de-sac. After three weeks they are removed under topical anesthesia. A local infiltration is sometimes also necessary for their removal. If, upon observation, it is found within two days that too much contraction has taken place, they may be removed. It is preferable then to wait for further surgical interference. The fewer number of strands into which the muscle is divided and the thicker the individual strand, the greater the effect.

THE ADVANCED TUCK

The conjunctiva is opened vertically over the muscle attachment, Tenon's capsule exposed and the muscle tendon oriented and properly exposed. The lateral fibres are carefully preserved and the tendon well along the belly of the muscle so exposed as to give adequate room for a proper tuck-advancement and insertion. The conjunctiva is bluntly dissected forward to the limbus. (See Figs. L, M.) The muscle hook is inserted and slid under the tendon, its point at all times hugging the sclera, until it is beyond the opposite border of the tendon. If necessary, another minute clip in the capsule to present the hook is made and the tendon is then completely and properly exposed. Another strabismus hook is inserted from the opposite side and the two are spread apart carefully. The tendon tucker is

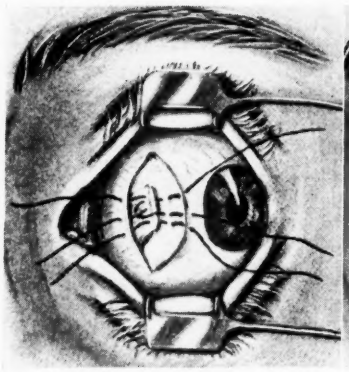

Fig. K. **Jameson Recession:** Tendon held 4 mm. behind insertion, attachment severed. Suture through distal conjunctival flap, through middle of tendon, back to its surface, and slides underneath the suture between tendon and conjunctiva. Bites in sclera, then engages proximal conjunctival flap. Two more sutures placed—one above, one below.

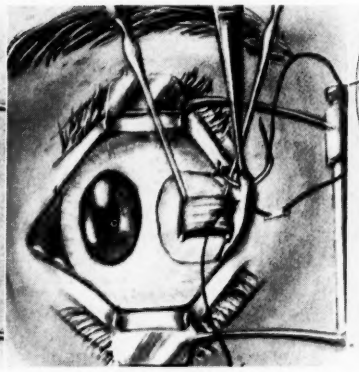

Fig. L. **Advancement:** Tendon stretched between hooks. Double-armed suture previously threaded through special gold plate (Wiener gold plate) is passed through distal conjunctival flap.

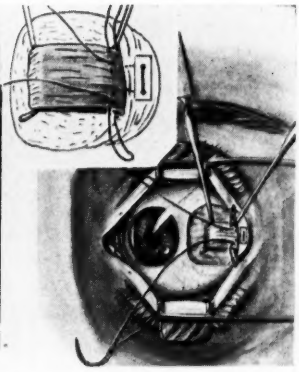

Fig. M. Advancement (cont.): Sutures in tendon whip stitch loop pulled taut; tendon cut, stump smoothed. Tendon sutured near limbus through sclera.

inserted and a maximum tuck obtained. A temporary chromic suture is placed through the loop of the tucked muscle and anchored at the limbus through the sclera. Chromic 000 is threaded through the tendon tucker eyelets and again through the sclera as shown by illustrations (see Figs. 1, 2, 3). These are carried forward through the muscle and attached into the sclera 1 mm. inside the limbus or adjacent to the limbus. The four strands of chromic suture material are brought out through the bulbar conjunctiva and later placed through the external canthus, tied, and cut as per illustration (see Fig. 4). They, of course, have been surgically knotted after entrance through the sclera at the limbus. Before placing them through the external canthus, the bulbar conjunctiva has been closed with a running suture; no knots are necessary. The anchorage afforded by this operation with the sutures placed through the external canthus keeps the eye deviated through the ensuing days and gives maximum correction for internal strabismus. (Fig. 5.)

Local administration of penicillin drops (1,500 units per cc. of normal salt) and penicillin ointment have proven the most satisfactory. The eyes are bandaged for two days, with observation on the day following surgery and continued bandaging for more than two days if desired.

Subsequent orthoptic training with the development of fusion, stereapsis and binocular single vision is of inestimable benefit in the follow-up of these surgical cases.

SUMMARY

In an extremely detailed and scholarly study, the author discusses the mechanics of strabismus, in its various manifestations. He cites the observations of a number of earlier authorities and follows with an account of several operative technics in which he has had considerable successful experience. This account includes not only the actual operative procedure, but such items as precautions in the use of anesthesia and details of after-care.

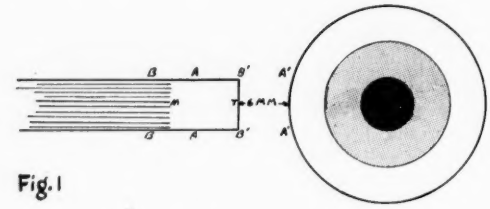

Fig. 1

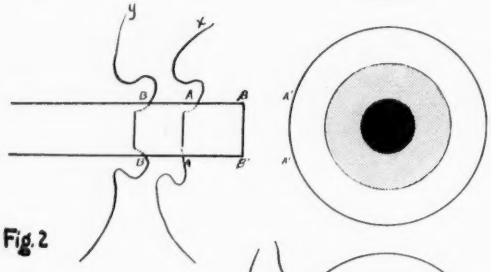

Fig. 2

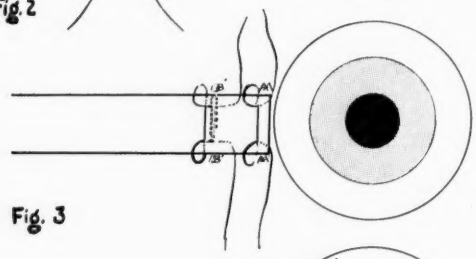

Fig. 3

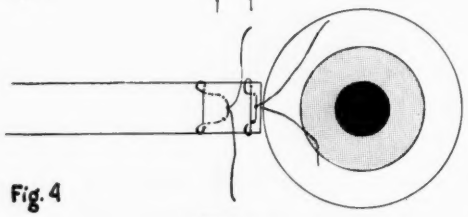

Fig. 4

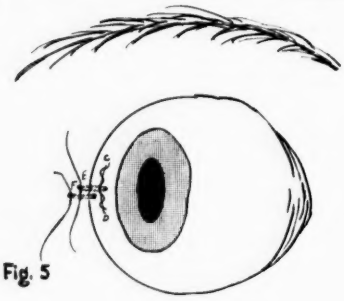

Fig. 5

Fig. 1. **Rigg's Advanced Tuck:** The diagram shows the eye, the limbus A'A'; the lateral rectus muscle with its attachment at B'B'; the tendonous portion from T to M, the muscular portion starting at M. The distance B'B' to A'A' is 6 mm.; from T to M is 9 mm.; from A to B and from A to B' is 6 mm. It is possible by the advanced tuck to bring the tendon from points AA to points A'A'.

Fig. 2. Same as Fig. 1 with additional information. Sutures *x* and *y* have been introduced just back of AA and BB respectively. The sutures may be placed farther forward toward attachment as desired, according to amount of tuck to be taken. The suture near BB may be placed forward at muscle edge proper.

Fig. 3. Points AA have been brought forward to A'A' near limbus, and sutures have been introduced around edge of muscle and through sclera, giving definite anchorage near limbus. Points BB have been brought forward by sutures just posterior to same, to B'B'. BB' indicates tendon attachment; the tendon has been folded on itself. The sutures near BB' are brought around muscle edge and through same; definite scleral anchorage is then made.

Fig. 4. The sutures have been brought through tendon and tied on anterior surface; more sutures may be placed between these two sutures if desired. A tucker may have been used in the advance, or Berens' tendon forceps. The tendon or strabismus hook is always used, but is not diagrammatically shown.

Fig. 5. The sutures have been placed through the conjunctiva, then through the external canthus and again tied at points indicated by E and F. C and D indicate the conjunctival incision closed by running suture. The eye is pulled out and anchored, a feature of definite value in these cases. The folded muscle tendon does not show after healing takes place.

SOMMAIRE

L'auteur nous donne les résultats en détail d'une étude approfondie du mécanisme du strabisme. Il cite les observations de différentes autorité et nous décrit plusieurs techniques opératoires que lui ont donné des résultats satisfaisants. Non seulement il decrit les procédés opératoires mais il énumère certaines précautions désirables sous le rapport d'anesthésie et de soins post-opératoires.

RESUMEN

La acomodación es un acto reflejo y la inervación es binocular e igual en ambos ojos: ley de Hering.

"El sistema oculomotor que gobierna los movimientos oculares, y, en gran proporción regula e influencia la coordinación de todo el organismo, constituye un sistema considerablemente intrincado y de extraordinaria importancia clínica." Duke-Elder.

Seis músculos extra-oculares: el recto lateral interno, con el músculo recto lateral externo estabilizan el ojo en elevación y depresión.

(Adductor). En los movimientos paralelos: adducción; en los no paralelos: principalmente conversión.

El recto lateral externo, con el recto interno coayuda a la estabilización del ojo en elevación y depresión. (Abductor). En los movimientos paralelos: Abducción; en los no paralelos: diversión.

La mayoría de los ojos hiperactivos e hiperinervados se hallan del lado convergente; consecuentemente seguimos los siguientes pasos:

1) Obtención del punto más cercano de convergencia, de no existir fuerte insuficiencia de convergencia.

2) Determinación prismática relativa de cerca y a distancia; si la desviación de cerca es más grande que la a distancia indica hiperactividad del recto lateral interno (Medialis).

3) Prueba de desplazamiento; si el ojo converge bien por debajo del pliegue semilunar, indica hiperactividad de los músculos convergentes.

4) Exposición en el momento de la operación; si se comprueba tensión facial el diagnóstico está confirmado.

Anestesia: local, general, pentothal sódico intravenoso.

Intervención quirúrgica: en la Tenotomia sígase la línea ecuatorial, fijación definitiva por sutura escleral. Incisión primaria: inmediatamente por delante del pliegue semilunar, encima de la sutura escleral, facilitando drenaje y evitando reacción tisular. Aíslese el músculo, diséquese la conjuntiva hacia atrás hasta el limbo, márquese el punto de desplazamiento posterior y fíjese el músculo en dicho punto. Operación O'Connor, dividiendo recto lateral externo en cuatro cabos, tratamiento suturas por métodos O'Connor, dejándolas tres semanas.

Método Rigg (Tuck) avanzando el tendón, sin separarlo, hacia el limbo o cualquier porción de la esclerótica en dicha dirección. Así se pliega el tendón sobre sí mismo, se obtiene adecuada sutura de la esclera y se asegura el máximo acortamiento del tendón y el músculo; fíjase asimismo suturas a través del ángulo externo.

Catgut cromático atraumático (10 días) del 000 es el empleado para la operación.

Свод

В очень подробном и ученом исследовании автор обсуждает механизмы страбизма в его различных проявлениях. Он цитирует наблюдения многих прежних авторитетов и затем дает отчет нескольких оперативных техник, в которых он имел значительный и успешный опыт. Этот отчет включает не только действительную оперативную технику, но также и предохранительные меры в применении анестезии и детали послеоперативного ухода.

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Uretero-Ureterostomy

Anastomosis of Old Stump of Right Ureter with Injured Left Ureter

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THIS case is unique because the anastomosis was made transvertebrally between an old stump of the right ureter, left there 9 years previously following a nephrectomy, and an injured left ureter, the injury having occurred during a recent operation for chronic adnexal disease. The case can best be followed by the history:

Mrs. A.L., age 44, entered Beth Moses Hospital on November 13, 1944 complaining of severe lower abdominal pain, fever, dysuria and headache for the past few weeks. Her previous history showed that about 9 years before (age 35) she had become pregnant, developed pyelitis of pregnancy and was desperately ill with chills and fever. In spite of repeated cystoscopies and catheterizations she miscarried at about the seventh month; this was accompanied and followed by persistent elevation of temperature and pyuria. Her right kidney was so badly damaged that a right nephrectomy was performed; after a long and tedious convalescence she felt much improved, except that she had repeated episodes of lower abdominal pain and fever at varying intervals.

At the time of the present admission she had one of her usual attacks of lower abdominal pain, dysuria and fever. The gynecological examination showed that she had "distinct palpable masses in both right and left iliac fossae, and hypogastric areas." Vaginal examination disclosed a hard, tender, fixed mass that filled the entire true pelvis. The mass was continuous with that felt abdominally. The tubes and ovaries were not distinguishable as such.

A diagnosis of bilateral tubo-ovarian abscess was made.

During the ensuing weeks her temperature varied between 99° and 102° F. The blood count was R.B.C. 4,000,000; W.B.C. 15,000; Polys 75 per cent. Sedimentation rate was rapid. In spite of the favorable red blood count, the patient was rather thin and asthenic with large hollow eyes and sallow complexion. The sedimentation rate was 18 mm. in 30 minutes. Urinalysis was negative. She was placed on sulfadiazine, but in spite of this therapy her temperature continued to be irregular, varying between 99 F. and 101 F., most of the time remaining below 100 F. On the twenty-fifth day after her admission to the hospital (12/8/44) she was operated upon; the findings were as follows:

The sigmoid was sprawled across the pelvis and was firmly adherent to the fundus of the uterus. A plastic exudate covered the uterus. The left adnexa was a mass the size of a grapefruit firmly adherent to the posterior layer of the broad ligament. Four ounces of thick greenish pus were evacuated. The right adnexa was in a mass of adhesions about the size of a hen's egg. There was no free pus on this side. The operation consisted of carefully liberating adhesions, by blunt and sharp dissection, and of evacuating the free pus on the left side, with excision of both tubo-ovarian masses. Two cigarette drains were inserted in the left pelvic region and the abdomen closed in layers.

The post-operative reaction, as was to be expected, was violent. Her temperature rose

* Attending Urologist, Beth Moses Hospital.

rapidly to 105.4°, and the pulse to 150. During this time blood transfusions and penicillin (30,000 units every 3 hours) were administered. (It will always remain a question whether the temperature was a post-operative reaction or was a result of the transfusion, in view of the fact that the patient always reacted severely to transfusions. *It was noted that the patient did not void.* About 6 hours after the operation patient had not voided; yet when the bladder was catheterized only 3 drams of urine were obtained. Five hours later only 20 drops were withdrawn, in spite of the fact that parenteral fluids were being given liberally.

The following morning, cystoscopic examination was made; the report was as follows:

"Bladder is empty. Its capacity and appearance are normal. Both ureteral orifices are normal. Indigo-carmine 5 cc. given intravenously fails to appear in the bladder after 15 minutes. The left ureteral catheter (the only one introduced) rose to about 2″ from orifice and met an impassable obstruction. No urine was obtained per catheter. *Impression*—Left ureter completely blocked 2″ above orifice."

An immediate left nephrostomy was advised.

Under cyclopropane anesthesia, through a left lumbar incision about 8 inches long, the left kidney was exposed. It appeared enlarged and edematous. A Kelly forceps was plunged through from the outer kidney border to the pelvis. A gush of blue urinous fluid poured out, and a Pezzer catheter was inserted into the pelvis of the kidney. A cigarette drain was placed into the wound, 5 grams of a sulfa drug dusted on and the wound closed in layers.

Reaction to this procedure was rather mild, especially when one is mindful that the patient still had the infection in the lower abdomen.

Her temperature rose to 103 F., but dropped within 24 hours to 99.4 F.; her pulse-rate dropped correspondingly to 100 and remained almost constant except for two unexplained elevations that lasted about 24 hours each time.

After the nephrostomy the patient remained quite comfortable, and drained a normal quantity of urine through her nephrostomy tube. Her general condition was much improved. Her R.B.C. ranged between 3 and 4 million. Hemoglobin ranged between 8 and 9 grams, nitrogen between 11 and 13 milligrams, and urine concentration between 1,012 and 1,026.

Fig. 1. Before operation—uretero-ureterostomy. Cystoscopy shows catheter introduced into stump of ureter rising 16 cm. from orifice. Above, right—Pezzer catheter in kidney pelvis.

On January 15, 36 days after the nephrostomy, cystoscopic examination was made to ascertain the length of the ureter that was left on the right side after the nephrectomy 9 years before. This was found to be 16 cm. in length from the orifice; x-ray showed the proximal end of the catheter above the brim of the true pelvis.

Three days later the patient appeared well enough to undergo the final operation, which was done under spinal anesthesia (Pontocaine 16 mg.). The abdomen was opened through a left rectus incision about 10 inches

long beginning about 2 inches above the level of the umbilicus to 8 inches below. The findings were as follows:

Right kidney was absent. Left kidney was easily palpated because of the previously inserted Pezzer catheter left in place in the pelvis of the kidney. The left ureter was identified and followed downward until the ragged end was found in a mass of adhesions just below the brim of the true pelvis. The stump of the right ureter was found easily as it crossed the iliac vessels in the center of their span. An Allis clamp was applied to the end of the right ureter so it could readily be found. The left ureter was loosened from its bed to the level of the iliac crest. The left ureter was brought under the peritoneum and over the great abdominal vessels so that it could be approximated to the right ureter. Now a small 1/8 inch longitudinal incision was made in the left ureter about 3 inches above the loose end and a #6 ureteral catheter inserted and pushed downward out of its frayed end, and into the freshened proximal end of the right ureter. The catheter was then inserted further until it reached the bladder. There was no guessing about the length required to reach the bladder, for the length of the right ureter was known (16 cm.). The ends of the ureters were approximated with #000 atraumatic chromic suture. The raw edges of peritoneum were approximated, and a small piece of omentum was fixed over the anastomosis; the abdomen was closed in layers.

URETERO URETEROSTOMY

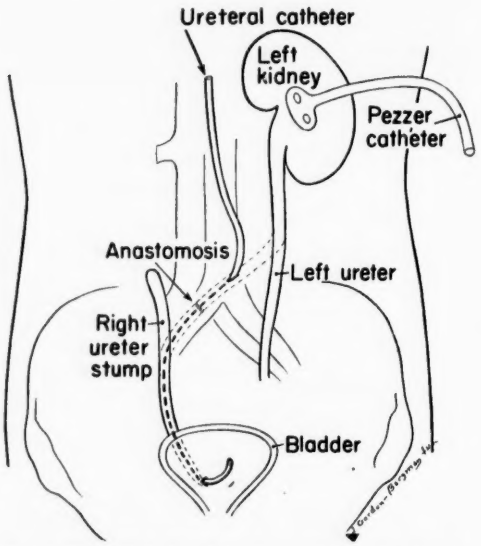


Fig. 2. Simplified drawing of operation, showing introduction of ureteral catheter which acts as splint and simplifies apposition of stump end of right ureter and injured end of left ureter.

Postoperative reaction was moderate. The temperature rose to 102°, but returned to normal in 48 hours; thereafter only minor fluctuations occurred.

Two weeks later the catheter that had been left in place during the operation, was brought out of the bladder by cystoscopy, and left projecting about 4 cm. from the external urinary orifice.

One month after the operation cystoscopy was again performed, and the indwelling ureteral catheter removed; a fresh catheter was introduced. The ureteral catheter easily made its way up to the pelvis of the kidney without meeting any obstruction, and indigocarmine that was given intravenously came down readily. It was felt now that there was a continuous tract from the bladder to the kidney. At this stage very little urine came down toward the bladder because she still had the nephrostomy tube. We left the ureteral catheter *in situ*, and the next day removed the nephrostomy tube.

During the following two months, the patient was plagued by all sorts of minor complaints, such as profuse drainage from the pelvic operation and congestion of the lungs; she also appeared exhausted and anxious. All kinds of supportive treatments were necessary. During this time, however, the quantity of urine increased so that on May 3, 1945 she could be discharged. At this writing, 5 months later, she has gained 23 pounds, and is voiding 16 to 18 ounces of urine at a time.

COMMENT

When one or both ureters are injured during an operation, if repair is not

made immediately, do not reoperate to deligate or repair the ureter within the first 48 hours. The mortality following such procedure is prohibitive. The proper procedure is a nephrostomy which is easily accomplished at very little risk. With this operation performed, the patient's status is compatible with the continuation of life, and

Fig. 3. One month after uretero-ureterostomy. Catheter introduced per cystoscopy into right ureter orifice rises up and sweeps across vertebrae to pelvis of left kidney.

one has ample time to plan for any future operative procedures.

In a previous case where both ureters were ligated with chromic catgut following a nephrostomy, the catgut was completely absorbed, the ureters became patent and the patient made a complete recovery.

Trans-vertebral uretero-ureterostomy opens the possibility of saving many kidneys that have been needlessly sacrificed. Gynecologists, on finding an injured unrepairable ureter, have fre quently performed a nephrectomy to avoid a permanent urinary fistula. Others have permitted a ligated ureter to remain, thus sacrificing the kidney on that side. In these cases just mentioned a uretero-ureterostomy, if it could be accomplished, would be a far better procedure than an intestinal implantation, because if the latter is successful, the patient is forced to defecate frequently to eliminate the urine that is passed into the intestine, and there is also the possibility of ascending infection from the intestine to the kidney which looms as a great hazard.

One can contemplate many other traumatic injuries that could be repaired by attaching the injured loose ureter to the opposite normal ureter by an end-to-side anastomosis.

SUMMARY

A case of uretero-ureterostomy following injury to the only functioning ureter is reported in detail. The author believes that no other such case has been reported in the past 25 years.

That his results in this operation were fully successful, is attested to by the fact that following the operation, the patient gained in weight and now voids normally.

The author emphasizes two principles:

(a) Unilateral nephrostomy is advised even if both ureters are blocked. (Conditions compatible with continuation of life may be established by this rapid, simple procedure.)

(b) Transvertebral uretero-ureterostomy is feasible and can be applied to many types of traumatic injuries to ureters.

RESUMEN

Se detalla un caso de uréter-ureterostomía que sigue a la lesión del único uréter útil. El autor considera que en los últimos 25 años no se conoció caso parecido. El hecho de que el paciente ganara en peso y evacuara normalmente, demuestran que los resultados de la operación habían sido buenos.

El autor pone de relieve dos principios: a) nefrostomía (unilateral incluso si existen los dos riñones) por obstrucción bilateral de la uréteres; y b) posibilidad de una uréter-ureterostomía transvertebral y posibilidades de aplicación en muchas clases de lesiones.

RÉSUMÉ

L'auteur rapporte en détail un cas de urétéro-urétérostomie pour un traumatisme intéréssant le seul urétère fonctionnant. L'auteur ne croit pas qu'un cas anologue ait été rapporté dans les dernières vingt-cinq années.

L'opération a pleinement réussi. L'opéré a gagné en poids et élimine normalement.

L'auteur énonce deux principes: a) la néphrostomie (unilatérale même si il y a deux reins) pour blocage bilatéral urétèral; et b) la possibilité d'une urétérostomie transfertébrale, applicable à beaucoup de traumatismes du rein et de l'urétère.

Свод

Сделан подробный доклад уретеро-уретеростомии после повреждения единственного функционирующего мочеточника. Автор думает, что это единственный подобный доклад в последние 25 лет.

Что результат его операции был успешен доказано тем, что больному прибыл вес и мочепускание было нормальное.

Автор подчеркивает два принципа: а) нефростомия (односторонняя даже при двух почках) для двухсторонней мочеточной блокады и b) возможность трансвертебральной уретеро-уретеростомии и ее применение к многим типам повреждений.

PROSTHESES FOR THE NOSE

(Continued from page 62)

unnoticeable, pleasing features, is truly a worthwhile branch of the healing art.

SUMMARY

The author describes in detail the technic of making prostheses for the nose. Beginning with the initial impression, he continues through the sculpture of the prosthesis, determination of its boundaries, tinting and casting of the final mold, and its application.

SOMMAIRE

L'auteur nous donne en détail la technique à employer pour la confection des prothèses pour le nez. Il débute avec l'impression initiale et continue avec la sculpture de la prothèse, la détermination de ses limites, de sa coloration, de son coulage final, et de son application.

RESUMEN

El autor describe con detalle la técnica de la prótesis nasal. Comienza con la impresión inicial, continúa con la escultura, la determinación de los límites, matices y por último el vaciado para el modelo final, así como su aplicación.

Свод.

Автор подробно описывает методику приготовления протеза носа. Начиная с первоначального оттиска, он описывает скульптуру протеза, определение границ, оттенение и, приготовление модели и ее применение.

Editorials

The Raison d'Être

SINCE progress is essential to insure the growth and continuation of any science or profession, it is manifestly true that we are better surgeons today than we were twenty-five years ago. It is, nevertheless, astonishing to consider the advances which have been made in our specialty merely in the last three decades.

First, the two World Wars have widened our surgical horizons immeasurably by necessitating complicated surgery, both deliberate and emergency, which once would have been thought impossible. We are better physiologists, better pathologists, better technicians than we were. The experience gained in those wars, as well as the steady advance of general knowledge, held up before us a mirror in which our errors were vividly reflected, and taught us how to avoid those errors.

Second, anesthesia, a vitally important keystone to the success of surgical operations, has also made incalculable progress. In the early days of anesthesia, and for several decades following its adoption, surgeons had to operate rapidly, fearing that prolonged surgery would cause shock and invite other complications. Many deaths were due to chloroform anesthesia, and the indiscriminate use of other anesthetics caused a great deal of havoc. Today, the surgeon can take his time. He can operate deliberately, cautiously, with strict regard for anatomical structure, as the careful driver of an automobile proceeds surely and with moderate speed to his destination, while the motorist harried by haste plunges pell-mell toward his destination, frequently leaving calamity in his wake.

Third, the conquest of infection, once a dread and ever-present specter in the operating room, has freed both patient and surgeon of the fear which hampered the success of operations. The surgeon, limited by this fear as much as by the infection itself, was greatly handicapped. Now, penicillin, the sulfa drugs, streptomycin, and the synthetic coagulants have robbed peritonitis and other such infections of their sinister importance.

Fourth, the raising of hospital standards, an advance so ably championed by the American College of Surgeons, has insured better pre- and postoperative care, combined with more efficient assistance during the operation.

Fifth, improved and more numerous postgraduate studies in the science and art of surgery have provided younger men with far greater opportunities for advancement, and the profession with vastly better-trained newcomers. The impetus for better surgeons and better surgery, the arousing of public consciousness to existing evils at inexperienced hands, have paved the way for better work and further progress.

No longer do we see restricted groups of the surgical *elite,* so-called, handing down their experiences to a comparatively favored few. Now there is a real tendency toward a surgical democracy, particularly championed by the International College of Surgeons, a democracy for expression, a democracy for the broadening of opportunities to those who thirst for knowledge, and a sympathetic appreciation of the need of a universal brotherhood of surgeons. A constant reiteration of Pasteur's aphorism that "science has no boundaries," a swinging open of the doors of the halls of learning for all those who desire to enter—these will, in the final analysis, culminate in an unprecedented advance in surgery, and will earn the well-merited respect of the public for the profession of healing.

MAX THOREK

The International College of Surgeons
A Challenge

THE peoples of this war-weary and bomb-blasted globe, more than ever before in the history of the world, are looking for some solution to the problems of humanity. The world is in sore need of someone to point the way to a universal, successful, happy and unselfish mode of living. Thus far, selfish, petty motives have been dominant in the minds of our statesmen, both national and international. They have all failed in their mission, and in their vision, to see clearly and in true perspective the needs of humanity the world over.

All through history, the role of medicine has been vital in the lives of individuals, as well as nations. In the life of every person there is a time when he puts his whole faith, reliance and dependence in a man of the medical profession. The need still exists, in spite of the confusion, not only of political issues, but also of medico-political issues. The world has been reduced to a very small size by our modern means of communication and transportation. Now, more than ever, the task of the Doctor is more important, more vital and more intimate. The Doctors must be planetary minded, must be global in their thought and action; they must have a perspective of the world situation from the standpoint of medical science and need. They must integrate their medical thinking with the world-wide common problems of disease and suffering. They are in a position to evaluate with a more true perspective than the average individual, for with the doctors there has been a co-mingling of problems, ideas and approaches to the tasks of the present, as well as of the future. The medical profession, and especially the International College of Surgeons, knows no racial, political or credal barriers.

The International College of Surgeons was conceived under the spell and compulsion of unselfishness and with the idea and ideals that its tasks were planetary in character. The world needs men who are able to look at its problems with an unselfish, unbiased, unprejudiced and global perspective.

It would appear that the challenge of the age is that of the International College of Surgeons, with its many

splendid leaders and guilds in most of the great nations of the world. It behooves the leaders of this great organization to be training themselves to think from a global standpoint. The challenge, to this organization, is to think in terms of the entire world, to evolve a plan whereby medical and related social problems, insofar as possible, can be properly evaluated and put before the proper authorities.

No other organization enjoys the unique distinction and position of this body of men and women. Are we awake to the possibilities, to the opportunities and to the challenge that is now before us? Let us study unceasingly to formulate a plan—from the medico-surgical standpoint—that will be integrated with the present plans of practical world leadership, and with other plans that may be evolved in the future. Let us prove our willingness to sacrifice, to labor, and to lead where possible, that this world may be a better place because we have passed through it.

Our field is the world! Our needs are the needs of the world! The challenge is ours! What is our answer?

E. Forrest Boyd

Continuous Bath Treatment of Burns

SEARCH of the medical literature seems to indicate that the continuous bath treatment of extensive burns, although successfully used in Europe for many years, has not been widely adopted in this country. Are we overlooking a simple and successful method of treatment which relieves pain and promotes healing without the use of morphine and elaborate therapy?

The use of the continuous bath in surgery dates back to Paulus of Aegina, in the seventh century. Its use in the treatment of burns was described by Passavant in 1858 and by Hebra in 1861. In this country a few scattered papers in the medical journals mention this treatment.

I have seen the treatment in operation in Vienna in 1924–25, in 1935, 1936, 1938, and 1939. Plain water was used in large tubs equipped with facilities for constant flow of the water. The patients remained in the tubs day and night, resting on a floating mattress which had openings for voiding and bowel movements. The running water carried off all debris.

No painful dressings were required which might add to the shock, and no cutting of desquamated skin and necrotic flesh was necessary. The flowing water washed all this away. There was no pain; the burns healed, and new skin formed. No morphine was required. The temperature was regulated, but usually the water was kept cool (hot water might induce shock).

I saw and talked to twenty or thirty patients in these baths. None of them had lost any appreciable amount of weight, except what would naturally be expected in any similar condition. They seemed to be comfortable and contented.

In discussion of this treatment, the objection has been raised by colleagues that such baths would cause excessive protein loss. On the other hand, Dr. Frederick M. Allen, Professor of Metabolism, New York Polyclinic Medical

(Continued on page 91)

Introducing "The Termite"

SEVERAL mysterious occurrences have taken place during recent months which have yet to be satisfactorily explained. The first of these came one night early in October, when I was roused from a restless sleep to hear faint scratching noises in the region of my desk. "M-m-m . . . must do something about that mouse tomorrow," I thought drowsily, and drifted off again into slumber. When morning came, I was puzzled to see on my memorandum pad a number of curious little ink marks of a certain similarity, connected by irregular smears of ink. This would not have seemed so strange had there not also appeared on the pad in awkward, shaky lettering, the words, "Termite Tracks."

Though at a loss to explain how these scribblings came there, I dismissed the incident from my mind until a few nights later when, unable to sleep, I again detected the slight scuffling sound I had heard previously. I jumped out of bed and went toward my desk, from which the sound seemed to come, and turned on the light. No living thing was visible there, but my ink bottle stood open with streaks of ink leading from it to my desk pad, and from there to a crack in the desk, where they disappeared. I was astonished to see on the pad more curious little marks, like tiny footprints, plus a crude drawing depicting either a worm or an insect of some kind, and the signature in the same sprawling, shaky letters connected by smears of ink, "Yours, the Termite."

Pondering this mystery, I returned to bed, where sleep eventually overtook me. In answer to my questions in the morning, my family professed no knowledge of this occurrence, and were as mystified as I by the scrawlings. Several successive nights found me sleepless, determined to find the cause of the mystery, but nothing further occurred for several days. Finally, overcome by exhaustion, I slept soundly through one entire night, and wakened the next morning with the feeling that I had missed something. I rushed to my desk, and, sure enough, there on the pad were more scribblings, a little more sure this time and less awkward. This time the insect figure was depicted peering coyly out from a block of wood with an impertinent grin on its face; the message was, "See you in Detroit, Doc. Ha, ha!"

Of course, there was nothing particularly frightening or alarming about these nocturnal visits, but one may easily imagine the burning curiosity which consumed me to know what was behind it all. The Detroit Assembly was close at hand, however, and I had no time to devote to delving further into the mystery at the time; moreover, had not my mysterious visitor said he would see me in Detroit?

My mind was full of details of the convention, but frequently the memory of those small inky squiggles would recur, and I unconsciously awaited the first sign of the creature's presence at the convention. However, at the end of the first day's business, I retired

fatigued to my hotel bed, having completely forgotten my small friend (at least, I hoped he was a friend). I fell asleep immediately, and woke in the morning to find a note lying on my pillow, which said, "Sorry, I'm late; tell the boys hello for me." By this time I was becoming angered. Wanting to catch my strange and invisible visitor in the act, I sat up on subsequent nights until my heavy eyelids would no longer support themselves, and each morning there was another note from my little tormentor, with such remarks as, "Good show, glad I came. . . . Keep your chin up, you're doing fine. . . . Swell eats, whose black market are you patronizing?" and other equally impertinent quips.

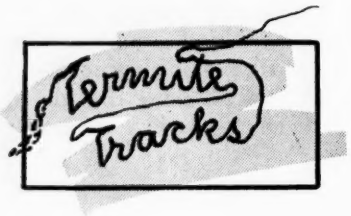
Not once did I glimpse the little culprit, and returned to my home no wiser about the matter than I had been when I left. Strangely enough, no further visits were forthcoming after my return, and I came to believe—in fact, hoped—that the tiny imp had become lost or perhaps trampled on in the crowd at the Convocation the last night in Detroit.

However, a few weeks later, when I was resigned to the fact that the mystery would forever remain unexplained, I was again awakened from my sleep by the sound of rustling papers being slid across the floor. Quickly, switching on the light, I leaped from my bed, but as before, no living creature could be seen. However, there was a considerable sheaf of papers lying on the floor of my bedroom, covered with the odd hieroglyphics which I had come to recognize as peculiarly the Termite's, and a number of drawings, all pertaining to the Detroit Assembly, and showing that the Termite had a very keen eye and observing nature.

After perusing the material that the visitor had left, I resigned myself to the strange ways of the creature, and congratulated myself that he had chosen me as his medium to the outer world. He had been able to insinuate himself inconspicuously into every activity of the Assembly, and had written a description of the affairs which took place that could have come, I realized, only from the mind and pen of a member of the International College of Surgeons. While I have no recollection of any such organism having been taken into the Fellowship of the College, or any way to imagine how a member might turn himself into the person of my small visitor, I can only rejoice that one of such extraordinary gifts has joined our ranks. The Termite persists in his incognito, yet I would wager that his identity is not the mystery he fondly believes it, to those of us who recognize his sharp wit and keen powers of observation. At any rate, he promises to make his nocturnal visits regularly, and we look forward to seeing the "Termite Tracks" henceforward as a regular feature of the JOURNAL. Long live the Termite!

YE EDITOR

Beginning on the following page, the first feature of "Termite Tracks" depicts doings of the Detroit Assembly. Look for the Termite in subsequent issues of the Journal.



. . . from the Detroit Assembly

Any account of the Detroit Assembly would be inadequate without some mention of the beautiful city of Detroit and the fine coöperation of the laymen who were involved in the assembly plans and activities. The accolade of the visiting surgeons and their families is not only for the doctors of Detroit, but for the lay participants also. Visitors were generous in their praise of the hotels and the friendly atmosphere of welcome that was everywhere manifest. Transportation in all forms seemed excellent, and even the weather was dressed in its "Sunday best." Visitors participated in every phase of social, medical, and business activity and the delegates are still talking about the extracurricular activities of this assembly. Hundreds of surgeons and their friends visited the Fine Art Galleries of the J. L. Hudson Company, Detroit department store, to view the $100,000 exhibition of the medical paintings of Dean Cornwell, Chapin, and Rockwell Kent. These paintings depicted the history and accomplishments of medicine and surgery in many fields.

Rarely has an assembly of any type created such nation-wide and, one might say, international attention; the stories of the science reporters were carried in newspapers over the entire continent and many were reprinted abroad. *Time, Newsweek,* and medical magazines carried reviews of the papers that were presented. Other avenues of publicity included three radio programs and a television program, these broadcasts totaling some seventy-five minutes on the air; spot announcements on newscasts carried the events of the meeting from coast to coast. Almost a million lines of newspaper and magazine space were devoted to the Detroit Assembly.

Many letters and telegrams of congratulation and felicitation were received by the officers

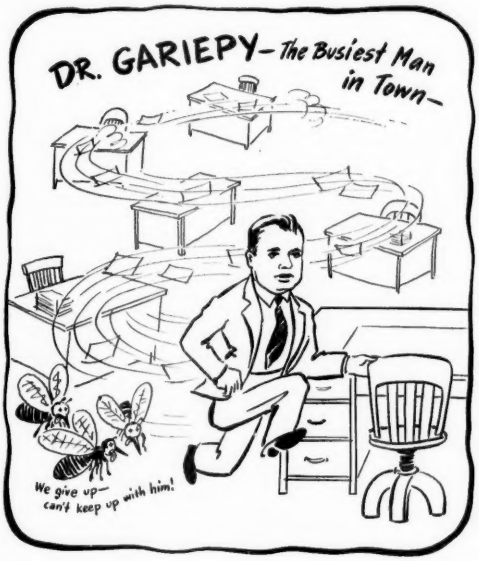
DR. CHARLES HUSBAND
CHAIRMAN – HOUSING COMMITTEE

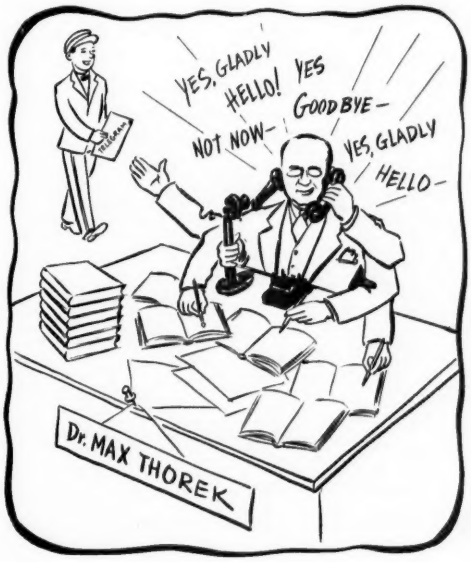
of the United States Chapter of the International College of Surgeons.

The Detroit colleagues prepared a program that defies description, even in terms of Hollywood superlatives. It was great! Surgeons of Detroit, we salute you with our eternal thanks, gratitude and wonderment at such a large scale task done with such grace and apparent ease.

Charles Husband, the Chairman of the Housing Committee, and his associates performed a Herculean task, with a touch of Houdini, in overcoming difficulties that at

times seemed almost insurmountable. We are reliably informed that the canine population of Detroit for a time felt quite uneasy, lest they be turned out of their homes; and that most of the house trailer units were quickly and quietly removed from the city's environment. Louis Gariepy was the personification of the "four busiest people" in Detroit. He even left home for "the duration" of the Assembly and occupied a room in a downtown hotel but neither there, nor anywhere else, could he ever be located except on a "dead run." His multitudinous duties and ubiquitous appearances discouraged even the most active and conscientious bees in his vicinity. Many of the so-called busy bees of the insect world just yielded up the ghost, after following him for a few hours.





Max Thorek, Secretary-General of the International College of Surgeons, again demonstrated his ability to "do all things for all men at all times" by his gracious manner in answering questions and autographing copies of his many books, and by his wise and tactful counsel.

The quiet, intriguing, almost sphinxlike personality of our International President, Albert A. Berg, was enjoying. Herbert Acuff, President of the United States Chapter, is admitted by all to have no peer. He is the personification of the perfect southern gentleman, and a towering giant—physically, socially, and mentally—radiating his confidence and inspiring influence over the entire assembly at all times.

Space does not permit mention of dozens of Detroit surgeons and other members of the College who so generously donated time, money, and influence to make the meeting such a glorious success. The fifteen hospitals were thrown open to the visiting surgeons, and the welcome that was extended by the staffs of these institutions was most cheering and helpful. Participants in the discussions and clinics at those hospitals will long remember the many inspiring and helpful thoughts gleaned from those meetings.

Visitors to the Assembly were impressed with the unusually extensive and splendid display of medical exhibits, one hundred and twenty-eight in all, which included technical displays and motion pictures. The coördination and arrangement of these exhibits gave evidence of careful planning, and their in-

terest to surgeons was reflected in the number of orders which were left with the exhibitors. Actually, all phases of human existence were covered, including prenatal and postnatal care, and the intervening span of life from babyhood to old age. In the exhibit halls one could see "gadgets" of all types and description—all with a single purpose—to make the practice of surgery more scientific, more accurate and more beneficial to humanity. Of course, the latest in orthopedic

hardware of all sorts was on display, including high-powered "harmless saws" to do away with the back-breaking and perspiration-producing methods now used for the removal of casts of all sorts.

Foods that defied description and competition were displayed, and, in close proximity, diets for utilizing foods of all descriptions. The entire field of medicine, from the early dawn of history to the present time, was covered by the many well-written books and periodicals on exhibition. Tools for every purpose and every experience in the life of the surgeon were laid bare to the public gaze. Along with tonics, vitamins, liquid medicines and anesthetics, were shown the various types of therapeutic gases that may be used in the practice of surgery. Almost the only thing missing for the future safety and comfort of the surgeons were displays of asbestos clothing or other equipment for the next life.

Visitors to the various scientific booths were impressed by the fact that the exhibitors, especially those offering motion pictures or lectures, were careful not to infringe upon the time of the sessions and the guest speakers. The assembly, in the same way, constantly emphasized the value and importance of the exhibits and allowed ample time for viewing the various booths.

Have you met Bill Burns? No? You've missed a treat. Don't fail to meet him at

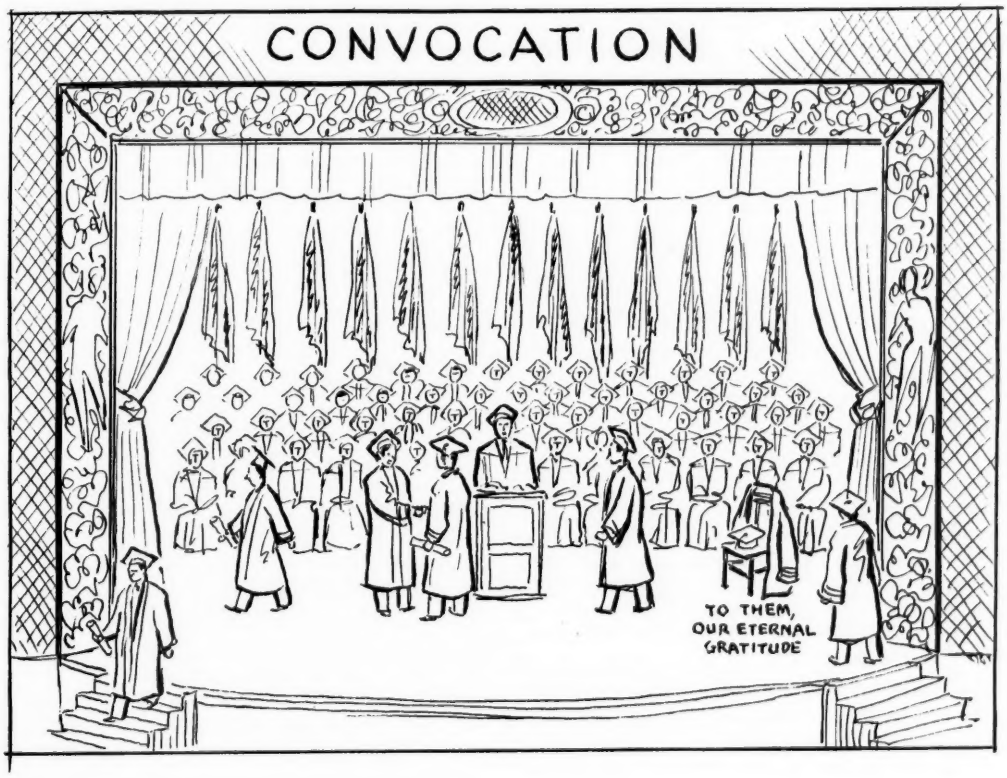
the Chicago Assembly. Your problems vanish into thin air once Bill knows of them.

The assembly and convocation were truly international, with speakers and visitors from Canada, Egypt, England, Mexico, Peru, Czechoslovakia, and many other parts of the world. This multi-nation gathering was a

compliment to the United States Chapter of the International College of Surgeons.

The convocation was beautiful in its simplicity and the smooth way in which everything was conducted. All praise and credit must go to those in charge—Dr. Purcell and Dr. Cassidy.

marched across the platform to receive their various degrees. One could not help but be impressed by the Memorial Chair, where the habiliments of "A Fellow" were mute testimony to the memory of the loved ones who had passed to their eternal reward during the past year.



An aura of internationalism was thrown over the entire convocation, beginning with the processional, led by Dr. Cassidy and followed first by the national flags of the chapters throughout the world, then by the candidates of various rank to be inducted into the International College of Surgeons. This aura of internationalism was emphasized time after time during the program as many nations were represented, either on the platform by the officers, or by the candidates as they

One of the most impressive and beautiful instances of the entire convocation came when Herbert Acuff, President of the United States Chapter, interrupted the conferring of degrees and asked an illustrious father, Max Thorek, to confer the degree of Fellow upon his worthy son, Philip. During this heartwarming event, a wave of justifiable emotion swept the audience; eyes were moistened and handkerchiefs appeared as this scene of paternal and filial love was enacted. The

great need of the world today is an overwhelming abundance of such devoted family life, training and heritage. International discord could not live or thrive in an atmosphere of love, honor and respect.

Albert A. Berg, the International President, from whom big things are expected, delivered addresses to the candidates for membership, fellowship, and honorary degrees. A summary of the addresses would be entirely inadequate; therefore, we repeat verbatim, for your inspirational reading, the addresses which he gave that evening.

Dr. Berg's address to the class of surgeons coming into Membership and Fellowship:

"It is both a privilege and a pleasure for me, as President of the International College of Surgeons, to welcome this large number of outstanding surgeons into Fellowship and Membership of the College.

"It is a privilege, because you have been selected from a very large group of applicants. You have come from all sections of our wonderful country, a country that offers and affords every one the greatest opportunity for research and the practice of his chosen profession. You have been selected because of your outstanding qualifications and attributes of character, nobility and accomplishment.

"It is this nobility of character and purpose which distinguishes the excellent, select man from the common man. The excellent man makes great demands upon himself, and lives in essential servitude. He looks upon service not as an oppression, but as a necessity of life. He lives a life of discipline, a noble life. The privileges enjoyed by nobles are not in their origin, concessions or favors; they are conquests through personal effort. Nobleness implies excellency and effortfulness. It attaches itself to the well-known and the famous, and therewith, distinguishes its possessor from the anonymous mass. It is synonymous with a life of effort, ever set on excelling oneself, in passing beyond what one is, to what one sets up as a duty and obligation. Individuals who possess such nobility of character and purpose stand out, isolated and monumentalized. They are select men, the nobles, the only ones who are active, for whom life is a perpetual striving, an incessant course of training. This nobility you have and for this reason, you have been selected to our ranks. We know that by your efforts, you will advance the objects for which this College has been founded—that is, to create a common bond among surgeons of all nations, and to promote the highest standards in surgery throughout the world, without regard to race, creed or color; dedicated to the principle that science belongs to no country, because knowledge is the patrimony of humanity, the torch which enlightens the world.

"Not only is it a privilege for me to welcome you into our ranks, it is also a pleasure. By electing you, we add materially to the strength of the College and its United States Chapter. There is much work for all of us to do. The chapters of the College located in all countries of the world need the aid, the direction, the stimulation of the United States Chapter. This help is especially important to the chapters that are reforming and reorganizing after the cessation of the war.

"The trustees of the College extend to you all their sincere congratulations and good wishes; and, by the power invested in me, I confer upon you the degrees to which you are entitled by your election, knowing well you will fulfill and carry on the traditions of our profession and maintain and advance the glorious work that has already been done for the benefit of mankind. Let me recite:

'The Angel Sandalphon'

'There is an angel Sandalphon, taller than the rest,
Who stands near God, beside the Mercy-seat,
With multitudes of Seraphs at his feet.
He is of yon Celestials, doubly blest,
For lo, of all our mortal prayers, he weaves
To grace God's throne, a myriad laurel leaves.

The Surgeon is this Angel Sandalphon, whose
hands
Bind up the wounds with infinite concern;
When he is near, they almost cease to burn.
The spirits rise, the stricken heart expands.
We seem to sense the rustle of a wing,
As though a Presence, gentle and divine,
Had healed our hurt with fingers most
benign,
Leaving us hushed and sweetly wondering.' ''

Dr. Berg's address to the surgeons who received the degree of Honorary Fellowship:

'' 'Truth Is Beauty and Beauty, Truth. That is all we know on earth and all we need to know.'

''So sang the immortal Keats in the closing lines of his 'Ode to a Grecian Urn.' You will note that in these lines the poet makes a general statement. Truth is Beauty, always and everywhere. There is no difference between the Truth and Beauty, of the north or south, east or west, on this continent or in the whole world.

''They may vary in form, but never in degree. You, who are about to be inducted as Honorary Fellows of the International College of Surgeons, bring to us different types of these fundamental attributes, and thereby help to unify and broaden the science and knowledge of surgery. Nationalism and boundary limitations tend to limit the fields of research, narrow the horizons, diminish the means for the development and improvements of science, and limit the portals for entry of new ideas. Happily, this tendency to nationalism and isolationism is disappearing. As I stated before this evening, one of the purposes for which the International College of Surgeons was founded was to create a common bond among all the surgeons of the world, without regard to race, creed or color, and promote the diffusion of science and knowledge throughout all nations, because these belong exclusively to no country, but are the patrimony of all humanity, the torches that enlighten the world.

''In this spirit, the trustees of the International College of Surgeons have elected you as Honorary Fellows, and by the power invested in me as President of the International College of Surgeons, I confer upon you the rights and privileges belonging to this degree. We welcome you cordially and sincerely into our ranks. We look upon you, the leading surgeons of the world, as embodying the character of the village minister, so beautifully described by Goldsmith, in the 'Deserted Village':

'' 'As some tall cliff that lifts its awful form
Swells from the vale and midway leaves
the storm,
Though round its breast the rolling clouds
are spread,
Eternal sunshine settles on its head.'

''In conferring upon you this degree of Honorary Fellowship, it is not to bestow upon you another honor, of which you all have so many, but because we know that you will give to the College all that duty asks you to give . . . so well expressed by Wordsworth in his 'Ode to Duty':

'' 'Give unto me made lowly wise
The Spirit of self sacrifice
The confidence of reason, give,
And in the light of truth
Thy Bondman, let me live.' ''

* * *

The Hon. Joseph C. Grew, speaking on the topic, ''The Preservation of International Peace,'' drew from his depth of international experience acquired while serving as United States Ambassador to Japan, and, in an effective and statesmanlike fashion, addressed the assemblage on the fundamentals of national and international peace, and the rudiments of global or planetary thinking. It was inspiring to hear a man of his experience and authority speak with such clarity and impartial judgment. He emphasized that citizens of individual countries must become citizens of the world in their study, their thoughts, their aims and their aspirations.

The scientific papers were intellectually and technically of high caliber, and their scope was extremely wide, including practically all fields of surgery of the human body. What used to be considered practically unexplorable frontiers of surgery were talked about freely, glibly, and scientifically at this meeting. The frontiers of surgery have gradually been extended from the external portions of the body and its appendages to the deeper structures, and now include the innermost portions of the brain, heart, and lungs, and the intricate operations on the gall bladder, pancreas, eye and other parts of the human mechanism which only a few years ago were thought virtually inaccessible. Thus, surgery has surmounted seemingly impossible barriers, and marches boldly along the path of science to greater achievements.

Speaking from the vantage point of "The Termite," the different branches of surgery discussed at this assembly might be described and classified along mechanical lines. In "the field of the electricians," as exemplified by the lectures on brain and nerve surgery, the revelation of what can be accomplished is astounding and almost miraculous. Tumors in locations hitherto thought inoperable may be approached, reached and removed with very little disturbance of the normal function. Then, there are the "peep-hole" operations done on the frontal lobes, to relieve the unbearable pain of certain afflictions. It is to be hoped that in the near future some sort of "peep-hole" operation on the brain may be devised to make weary mortals forget the mistakes and disappointments of the past and become charged with the optimistic possibilities of the future. Nerve surgery seems to have become as simplified as splicing various types of delicate wires together in the field of electrical engineering. The poor, unsuspecting vagus nerve, which for many years seemed to rest in complacent assurance that it was free, especially in its deeper portions, from the depredations of the surgeon, has suddenly become as vulnerable as any other nerve in the body. Modern, ever studious surgeons chase it right down through the diaphragm to the lower portion, where it is no longer safe from the eye or the knife of the competent surgeon.

Plumbing came in for its share of publicity. What with transplanting the ureters, loops of intestines or loops of the large bowel—anastomoses of gall bladder ducts, gall bladders and other appendages—the developments in this field clearly demonstrate to the world the extreme versatility of the surgeon and the adaptability of the various organs of the body to careful, well-planned surgery. . . . The lungs were thought for many generations to be immune to surgery, but this myth has been exploded with atomic suddenness and boldness. . . . The ever-faithful heart has ceased to mark one of the frontiers of surgery and has yielded, though reluctantly, to the surgeon's knife. One of the latest miracles is the transformation of so-called "blue babies" to normal "white babies." . . . Stone masonry received its share of attention, as typified by plastic and orthopedic surgery. Much was learned by modern surgeons in handling tissue and bone grafts during the war, and with the new high-powered, easy-riding, incredibly fast automobiles that are being developed, it is to be feared that there will be far greater opportunity to enlarge this knowledge. Bigger and better and more comminuted fractures may be anticipated as a result of the new "all-vision," streamlined fish bowls that have recently been put on wheels. Such double-ended contraptions will certainly tax the reaction time and the visual acuity of the motor cycle officers, and may in time require the generation of a duplicate pair of eyes set in the back of the head.

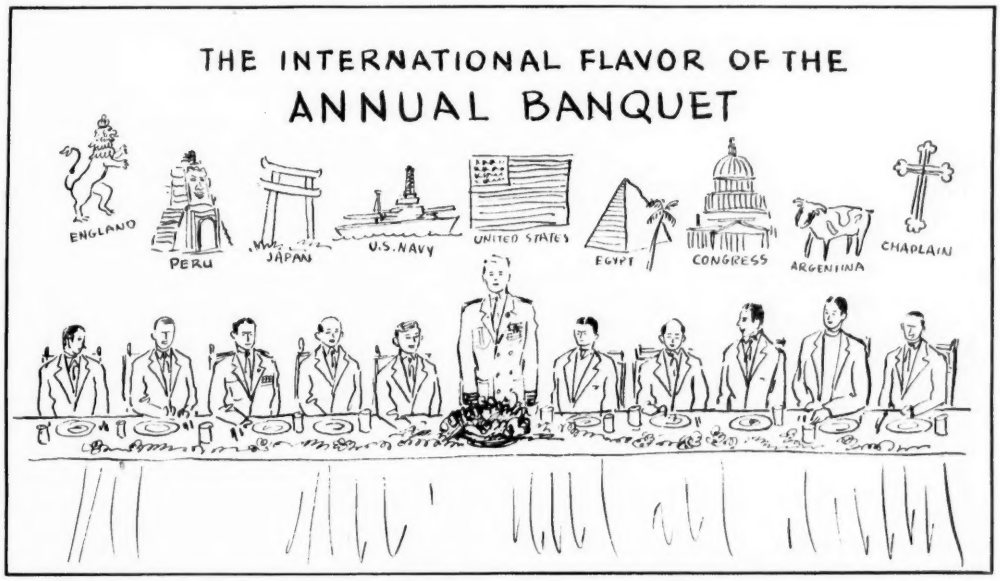
"The Termite" was somewhat puzzled by a, to him, new type of fracture, known as "Fractures in the Rural Hospitals." He is at a loss to know their anatomical location, etiology and prophylaxis; also, are they compound or bi-lateral?

The innermost recesses of the esophagus, stomach and small intestine are now routinely exposed to the eagle eye of the energetic surgeon, and we understand that ulcers of the stomach, duodenum and other parts of the intestinal tract are also being haunted and hunted down by the surgeon.

Intestinal obstruction is no longer that bugbear it once was, and the surgeon is rapidly becoming as competent in the untying of intestinal knots as the Boy Scout with his rope. There is nothing now sacred in the human body. Surgeons handle with ease and accuracy lights which expose all the cavities of the body to public view. What few inner recesses of the body are not as yet approachable by lights of some sort are visualized by some opaque material, so that nothing escapes the prying eye of the surgeon.

of Neoplasms." In many ways, the planetary-minded practitioner of surgery holds the key to the door of international understanding and brotherhood. This assembly was replete with men of such caliber and vision.

One of the most dramatic, inspiring and thought-provoking papers was given by Hamilton Bailey of London, who talked on "Impending Death under Anesthesia." He is a master, not only of the technic and problems of his subject, but of the language in which he described his operations and his procedures. His observations were based on his own case histories. He extolled the virtues of British nurses, described their sacrifices and devotion to duty during those stressful periods of the "blitz" and in the postwar period. He said an "undying debt of gratitude" is due to these sisters of true mercy, who stood by unflinchingly with un-



A masterful argument for internationalism was presented by William Carpenter MacCarty, Professor of Pathology at the Mayo Clinic. His address was entitled, "An International Nomenclature and Classification

swerving loyalty during the critical period. A monument, he said, should be erected to their valor. A vociferous round of applause from his large audience followed this statement.

The annual banquet which was the closing event of this, the greatest assembly of the United States Chapter of the International College of Surgeons, climaxed the Detroit conclave. It was truly international in all respects and most impressive. The speakers, the program, and the entire evening maintained the high standard set by the preceding activities and by previous assemblies. The speakers' table had a distinct international aspect, with Hamilton Bailey from England, Ambassador Oscar Ivanissevich from Argentina, Jacob Bitschai from Egypt, Joseph C. Grew, former ambassador to Japan, and Lyon H. Appleby of Canada. The inspiring personality of Dr. Appleby did much to stimulate and enliven the activities of the assembly. In his quiet, retiring, yet thoroughly attractive way, he is a personality well worth knowing.

The United States Navy was also present, in the persons of Fleet Admiral Chester W. Nimitz, Vice-Admiral George D. Murray, Vice-Admiral Ross T. McIntyre, Surgeon-General, and Chaplain Maurice S. Sheehy. The International College of Surgeons was represented by Albert A. Berg, President, and Max Thorek, Secretary-General. American medicine was represented by Morris Fishbein, editor of the *Journal of the American Medical Association,* and by Herbert Acuff, President of the United States Chapter of the International College of Surgeons. He was ably seconded by Louis Gariepy, Secretary of the Chapter. Congressman George A. Dondero, of Washington, D. C., also honored the head table.

All of the speakers seemed inspired by the occasion and the global importance of the meeting. Vice-Admiral Ross T. McIntyre gave a splendid address on the topic, "The Surgeon's Rôle in War and Peace," and gave due credit to the medical profession's record during the war, especially in research and the part played by immunization and speed in reducing the number of casualties and lost days in the fighting forces.

Morris Fishbein spoke on "The Progress of Medicine in Ten Eventful Years," holding the audience spellbound. His perfect enunciation, his clarity of speech, and the faultless manner in which he presented his concise, clear-cut, charming word picture of the past decade left an indelible impression upon his listeners. His forceful and dramatic presentation excited our praise, admiration and gratitude for those research men—many of them unsung heroes—and for the great contributions they made to the practice of medicine and surgery and the welfare of the world. We need more Morris Fishbeins to spread the gospel of scientific research and accomplishment for the benefit of suffering humanity. Dr. Fishbein's energetic, convincing, and unselfish ideas, coupled with his winning personality and character, made many more staunch friends for the altruistic workers in the great fields of medicine and surgery.

The closing address by Fleet Admiral Chester W. Nimitz, U.S.N., whose topic was "A Pathway to Peace," was a clarion call to the peoples of the world to achieve a unison of ideas which will lead to clear international understanding of the problems of the world at large, and the individual nations which compose it. The United States should be proud to have the services of a man of such vision as Admiral Nimitz. The *New York Times* quoted the following excerpt from his address:

"The medical profession has gone far in breaking down the boundary lines and barriers that have so long isolated the peoples of the world from one another. The existence of the International College of Surgeons is impressive evidence of the progress you have made in this direction. The United Nations has a precedent in the establishment of your organization."

Those who attended the Detroit Assembly returned to their homes *impressed* by the scientific and scholarly papers that were delivered; *pleased* by the gracious ease in which the entire meeting functioned; *grate-*

ful for the many new friends that were made and the old friendships that were renewed; and, finally, *challenged* by the world-wide ramifications and the broad humanitarian opportunities of the International College of Surgeons.

THE TERMITE LOOKS AT THE EXHIBITS

CONTINUOUS BATH TREATMENT OF BURNS

(Continued from page 79)

School and Hospital, has stated in a communication to me: "My personal view is that the cool bath treatment of extensive burns is excellent. The reported benefits are entirely rational theoretically. . . . The theoretical importance of hypoproteinemia in burns is being rapidly discredited . . . if anemia is controlled there will be nothing to fear from hypoproteinemia. . . . It is not a question of the water washing away protein, but only of passage of protein through the capillary walls. This process is presumably restrained by cool water as compared with warm dressings."

Even lay people know that immediate immersion of a burned finger or hand in cold water will result in relief of pain. Complete immersion in cases of extensive burns is merely the next step.

It would seem that further study and experimentation on this subject would be in order.

RICHARD A. LEONARDO

THE TWELFTH ANNUAL ASSEMBLY
of the
UNITED STATES CHAPTER
of the
INTERNATIONAL COLLEGE OF SURGEONS
will be held in
CHICAGO, ILLINOIS, on SEPTEMBER 28–30 and
OCTOBER 1–4, inclusive, 1947.
Headquarters will be at the Palmer House in that city.

GENERAL CO-CHAIRMEN

Karl A. Mayer, M.D., F.A.C.S., F.I.C.S. Raymond W. McNealy, M.D., F.A.C.S., F.I.C.S.

TRANSACTIONS AND MINUTES OF THE HOUSE OF DELEGATES

11th Annual Assembly, U.S. Chapter

INTERNATIONAL COLLEGE OF SURGEONS

The meeting of the House of Delegates of the United States Chapter of the International College of Surgeons was called to order at 2 P.M., Sunday, October 20, 1946, in the Michigan Room of the Hotel Statler in Detroit, Michigan, by the President, Dr. Herbert Acuff.

The roll call revealed that 33 states were represented. A quorum being present, consisting of the House of Delegates and their alternates, the Executive Council and the Board of Trustees, the meeting was declared open. The minutes of the last meeting of the House of Delegates were approved by unanimous vote as they appear on the records of the national secretary.

The nominating committee reported the following recommendations for officers for the ensuing term:

President..Herbert Acuff, Knoxville, Tenn.
President-elect
Custis Lee Hall, Washington, D. C.
1st Vice-President
Harry E. Bacon, Philadelphia, Pa.
2nd Vice-President
Roger Anderson, Seattle, Wash.
3rd Vice-President
Charles H. Arnold, Lincoln, Neb.
4th Vice-President
John E. Cannaday, Charleston, W. Va.
5th Vice-President
Wm. R. Lovelace, Albuquerque, N. M.
Secretary..Louis J. Gariepy, Detroit, Mich.
Treasurer...Drury Hinton, Drexel Hill, Pa.

The president presented the nominations to the assembly, and asked for further nominations from the floor. There being none, these officers were declared duly elected by unanimous vote.

In President Acuff's inspiring acceptance address, he pointed out that in the last 16 months the membership of the U. S. Chapter of the International College of Surgeons has practically doubled, and that strict evaluation of candidates is practiced by the regents, the examining board and the executive council. He stressed the fact that the United States Chapter is one of a great family, all under the aegis of the parent body, the International College of Surgeons, without which the chapter has no reason for existence. He discussed the international qualifying board which was created in Lima, Peru, and mentioned that Dr. Graña had appointed Dr. Wayne W. Babcock of Philadelphia chairman of the board in the United States, and Dr. Harry E. Bacon of Philadelphia, secretary. He pointed out that henceforth aspirants for fellowship will have to take the necessary examinations before being admitted, and that the details for the qualifying board are being worked out and will be announced at the proper time. Dr. Acuff thanked the officers, regents, and all officers for the fine coöperation he has received during his past term of office. He stressed the need for a home and library for the U. S. Chapter, and to facilitate this asked for discussion as to where the site for the permanent home should be. The discussion was opened by Dr. Gilbert Douglass of Alabama, who was followed by Doctors Arnold of Nebraska, Carney of Oklahoma, Bendel of Louisiana, Belliotti of Rhode Island, Hall of Washington, D. C., Moore of South Carolina, Brooks of Michigan, Cannaday of West Virginia, Pate of Florida, Hughes of Virginia, Hagen of North Dakota, Hess of Pennsylvania, Scheer of New York, Gallagher of Texas, Glickman of Massachusetts, Lovelace of New Mexico, McReynolds of Tennessee, Behrend of Pennsylvania, Burdick of Illinois, Klemme of Missouri, Noble of Indiana, and many others. It was finally

moved and seconded that the permanent home of the International College of Surgeons be situated in Chicago. This motion was carried unanimously.

The national secretary's report then followed, which was accepted with appreciation of the fine work Dr. Gariepy has done, not only in a secretarial capacity but in connection with the eleventh assembly—an assembly which was an outstanding success.

The treasurer's report was also presented, supplemented by an audit from the official auditors. It was moved to accept the report, and a vote of thanks was recorded for Dr. Hinton's excellent work.

On account of the illness of the chairman of the Board of Regents, Dr. Watson B. Morris, regrets were expressed and his report accepted by proxy. Since the chairman of the Board of Trustees, Dr. W. Seaman Bainbridge, was also absent on account of illness, he was represented by proxy of the International President, Dr. Albert A. Berg.

The International Secretary was called upon to report on the international activities, which he outlined as highly encouraging, and very progressive. He reported that in spite of upset conditions in the world, the Turkish and Finnish governments had authorized the formation of chapters, that a revival of the Italian chapter under Dr. Dogliotti is progressing rapidly, and that in Latin and South America the leadership can be depended upon for the successful progression of college activities. Dr. Thorek introduced Dr. Jacob Bitschai of the University of Alexandria, Egypt, who spoke of the splendid impression he had received of the activities of the College and of his vital interest in and efforts toward the formation of a Near East Chapter. The secretary was also deeply touched by the many sentiments of devotion expressed by members of the House of Delegates, and particularly thanked the international and national officers for their whole-hearted support of his activities, both for the College and for the JOURNAL.

The following were represented by proxy: Felix Cunha, San Francisco; Charles S. White, Washington, D. C.; Alfred A. Strauss, Chicago; Charles Hustead, Falls City, Neb.; and Gideon Van Poole, Hawaii.

A report from the chairman of the board of examiners, Dr. Moses Behrend of New York City, was received with appreciation. The president then asked the secretary to read the names of the members of the U. S. Chapter who have passed on during the past year, and requested that all present stand in silent homage during the reading. The following names were then read:

Horace Mitchell Baker, Lumberton, N. C.; John Herbert Bliss, Brooklyn, N. Y.; Foster Leonard Dennis, Dodge City, Kan.; Wells Philips Eagleton, Newark, N. J.; Maurice C. Hennessy, Council Bluffs, Iowa; William Jepson, Sioux City, Iowa; Vincent Anthony Lapenta, Indianapolis, Ind.; Benjamin D. Luck, Sr., Pine Bluff, Ark.; Ralph C. Matson, Portland, Ore.; Fred W. Minty, Rapid City, S. D.; Clyde W. Countryman, Spokane, Wash.; Lloyd Crockett Austin, Los Angeles, Calif.; Harold Joseph Halligan, Jersey City, N. J.; William Hyman Goldstein, Arlington, N. J.; Nathaniel Brown Stanton, Plainfield, N. J.; and Thomas Carmody, Denver, Colo.

The chairman, secretary and members of the qualifying committee reported their progress, and a thorough discussion followed, led by Dr. Albert A. Berg. After an analysis of every phase of the problem, the principles presented by the secretary of the committee, Dr. Harry E. Bacon, were unanimously approved.

It was tentatively decided, if arrangements could be made, to hold the next meeting in Chicago in September of 1947.

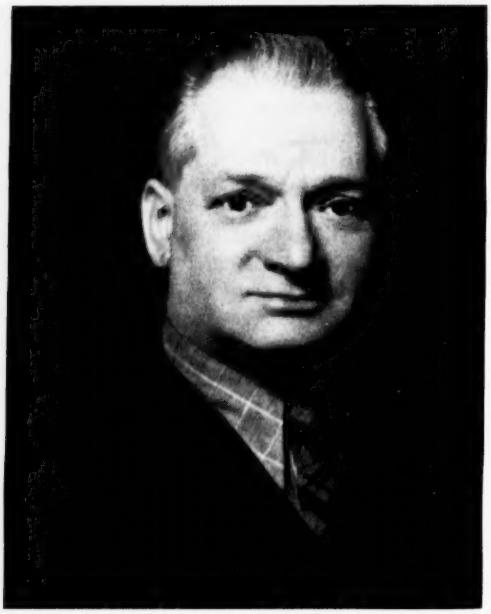
A discussion of the forthcoming convocation then ensued.

There being no further business to come before the house, a motion to adjourn was unanimously carried.

Obituaries

Victor Robinson, Ph.C., M.D.

Dr. Victor Robinson, eminent physician, medical historian, and professor of the history of medicine at Temple University School of Medicine in Philadelphia, died January 8 at the age of 60 years in his home in New York. Death was due to a heart ailment.



A son of Dr. William J. and Marie Halper Robinson, Dr. Robinson was born in the Ukraine and was brought to the United States as a child. He studied at New York University Law School, and received a Ph.G. degree from the New York College of Pharmacy in 1910. He was granted a Ph.C. degree by Columbia University in 1911, and received his M.D. degree in 1917 from the Chicago College of Medicine and Surgery.

Since 1917 he has been lecturer on the history of nursing at Temple University School of Nursing, and has taught history of medicine at the university since 1929.

A founding member of the History of Science Society, he was an official delegate to the International Congress of the History of American Medicine, Leyden-Amsterdam, Holland, 1927 and a council member of the American Association of the History of Medicine, 1939–41. Dr. Robinson was president of the New York Society for Medical History, 1940–41; a fellow of the New York Academy of Medicine and chairman of its section on history and cultural medicine in 1944–45, and a member of the Institute of Aeronautical Sciences.

He began his extraordinary writing career at an early age, with the publication in 1907 of "William Godwin and Mary Wollstonecraft"; in 1908 of "Comrade Kropotkin", a biography of Prince Peter Kropotkin; in 1919 of four works, "An Essay on Hasheesh", "Pathfinders in Medicine", "Pioneers of Birth Control" and "Don Quixote of Psychiatry." The "Life of Jacob Henle" followed shortly in 1921.

Probably Dr. Robinson's best known works are "The Story of Medicine", published in 1931; "Victory Over Pain: A History of Anesthesia" and "White Caps: The Story of Nursing" in 1946; Syllabus of Medical History, 1933; and "The Way of Life of a Physician", 1941.

Dr. Robinson was editor of the thirty-volume "Historia Medicinae"; *Medical Review of Reviews; Medical Life;* "The Modern Home Physician"; American editions of Paolo Mantegassa, 1935–36; and Krafft-Ebing, 1939; "Encyclopedia Sexualis", with contributions by 100 scholars, 1936; "The New People's Physician", eight volumes, 1941; and "Morals in Wartime", 1943.

He founded the Froben Press for publication of monographs on medicine and made five journeys to Europe photographing objects of medico-historical and archaeological interest in Crete, Greece, and Italy.

Dr. Robinson's writings and teachings have contributed largely to keeping alive the memory of the pioneers in medicine and nursing; his work is a constant reminder of our debt to those who have gone before, and we can only hope that another chronicler of landmarks in the progress of medicine will arise to immortalize the works and names of the scientists of the present and the future, as Dr. Robinson has done those of the past. His death is a tremendous loss to the medical profession and to humanity, yet he leaves so much of himself behind that he will always remain a living memory in the minds of students of science the world over.

He is survived by his widow, his mother, a daughter, Anita R. Margolin; a brother, Dr. Herbert S. Robinson, and a sister, Ellen H. Ringer.

Clyde Wallace Countryman, M.D., F.I.C.S.

Clyde Wallace Countryman of Spokane, Washington, a Fellow of the International College of Surgeons since 1941, passed away recently at the age of 45. Dr. Countryman was born in Bingham Canyon, Utah, was graduated from the University of Utah in 1922 with the degree of B.Sc. in medicine, and received his M.D. degree in 1924 from the University of Oregon Medical School. He served interneships at the Salt Lake County General Hospital and St. Luke's Hospital in Spokane, Washington, and held a residency in surgery under A. T. R. Cunningham and A. A. Matthews in Spokane.

He was staff surgeon at the St. Luke's Hospital in Spokane from 1928 to 1932, at the Sacred Heart Hospital from 1932 to 1941, and was police surgeon to the Spokane Police Department from 1928 on.

He held the position of instructor in anatomy at the Gonzaga University in Spokane from 1930 to 1932, and was a lecturer on materia medica from 1928 to 1933 at the St. Luke's Hospital.

He was a member of the Spokane County and Washington State Medical Societies and the American Medical Association, and served from 1932 until his death as secretary-treasurer of the Pacific Northwest Medical Association, to which organization he devoted a large part of his time and talents in guidance and direction.

La Revista del Colegio Internacional de Cirujanos es una cátedra abierta. Sus páginas sirven como medio de expresión para cirujanos que tienen un mensaje valioso para otros en su campo.

Los Editores de la "Revista", por consiguiente, recibirán con agredo para publicación todo material que pueda ser de interés a aquellos enrolados en cualquien rama del amplio campo de la cirugía, sean o no miembros del Colegio Internacional de Cirujanos.

Thomas Edward Carmody, M.D., F.A.C.S., F.I.C.S., F.A.C.D.

In the death of Thomas Edward Carmody of Denver, Colorado, the International College of Surgeons and the medical profession as a whole has suffered a loss which will be keenly felt. A national leader in the field of otorhinolaryngology, Dr. Carmody contributed greatly to the knowledge of ear, nose and throat diseases. His sudden death was due to a coronary occlusion which he suffered during a flight from Denver to Pueblo. He was found dead when the plane landed at the Pueblo airport.

Dr. Carmody was born in 1875 in Owosso, Michigan, and was graduated from the Denver and Gross College of Medicine in 1903.

Of the many professional organizations of which he was a member are the International College of Surgeons, the American College of Surgeons, and the American College of Dentists; he was a member of the House of Delegates (1927–1928) and chairman of the Section on Laryngology, Otology and Rhinology of the American Medical Association (1930–1931); past president of the honorary society of the American Academy of Ophthalmology and Otolaryngology; past president of the American Bronchoscopic Society, and American Laryngological, Rhinological and Otological Society; member of the American Society of Oral and Plastic Surgery and American Otological Society.

He was certified as a specialist by the American Board of Otolaryngology and the American Board of Plastic Surgery.

Among the many positions he has held, he was for many years professor of oral surgery and rhinology at the University of Denver Dental School; chief of otolaryngology, Child Research Council, research department, University of Colorado School of Medicine (1928–1936); oral surgeon, Children's Hospital; otorhinolaryngologist, St. Luke's and Mercy Hospitals; and consulting otorhinolaryngologist, Sanatorium of the Jewish Consumptives' Relief Society in Spivak.

Dr. Carmody served as a first lieutenant in the Medical Reserve Corps of the United States Army in 1917, and as major in the Medical Corps 1918–19. He was author of a chapter in Jackson and Coate's book, "The Nose, Throat and Ear and Their Diseases."

A fine gentleman as well as a scientist of renown, Thomas Edward Carmody will be greatly missed by all who knew him as well as those who have benefited from his advancements in the field of otorhinolaryngology.

Harold Joseph Halligan, M.D., F.A.C.S., F.I.C.S.

Word has recently reached us of the untimely death August 8, 1946, of Harold Joseph Halligan, well-known gynecologist and female surgeon of Jersey City, New Jersey.

Dr. Halligan was born March 29, 1902, in Jersey City, and was graduated from the Long Island College of Medicine in Brooklyn in 1926. He served his interneship at the St. Francis Hospital in Jersey City, where he was attending female surgeon and gynecologist from that time until his death. He also served as attending obstetrician at the Margaret Hague Maternity Hospital in Jersey City from 1932 on.

He was a Fellow of the American College of Surgeons and the International College of Surgeons, and a member of the American Medical Association, New Jersey State Medical Society, Hudson County Medical Society, the Academy of Medicine of Northern New Jersey (Surgical Section), American Congress on Obstetrics and Gynecology, and the Society of Surgeons of New Jersey.

Dr. Halligan shared offices with his brother, Dr. Earl J. Halligan, also a Fellow of the International College of Surgeons.

Lloyd Crockett Austin, M.D., A.I.C.S.

News of the death of Lloyd Crockett Austin, 53, of Los Angeles, has reached us. Dr. Austin was a specialist in pelvic surgery and gynecology, and was an associate member of the International College of Surgeons. He also held membership in the American Medical Association, the Los Angeles County Medical Association, and the California State Medical Association.

Dr. Austin was born in Fresno, California, June 16, 1893, and attended the St. Louis University (B.S. 1926), and the St. Louis University School of Medicine, where he received his medical degree in 1928. He pursued postgraduate studies at the University of Pennsylvania in 1932, and received the degree of D.D.S. from the University of California. He served a one-year interneship at Billings Hospital and the University of Chicago Clinics, and spent eighteen months at the state hospitals at Represa and San Quentin.

He was on the surgical service of the Santa Rita Clinic in Los Angeles and on the attending staff of the Queen of Angels Hospital in Los Angeles.

Prof. Luis Vargas Salcedo

The death of Professor Doctor Luis Vargas Salcedo of Santiago, Chile, last April 5 was a profound shock to the medical profession of Chile, who knew him as not only a distinguished gentleman and devoted friend, but an illustrious master in the art of surgery. He won the admiration of all who knew him and collaborated with him in his endless fight against the illnesses that attack humanity.

Professor Luis Vargas Salcedo made his preliminary studies at the Seminary of Santiago, Chile, and studied medicine in the School of Medicine of the University of Chile, where he made a brilliant record and received the degree of Doctor of Surgery, with honors, in 1905.

Among his distinguished teachers were David Benavente in anatomy, and Sierra in surgery. He was very close to Sierra, and their friendship, beginning between professor and student, continued between colleagues, so that for several years they shared the same consulting office.

Professor Vargas Salcedo's inclination toward the specialty of urology was apparent in his first years of medical practice. He became outstanding and especially successful in this field, eventually being given the title of Professor Extraordinary in urological surgery. He was the first in his early years to practice urethral catheterization in Chile.

In 1907, because of his brilliant record as a student, and the ability and skill which he demonstrated in the beginning of his career, he was commissioned by the Governor of Chile to continue his studies in Germany. While there he studied under Spalteholts and Waldeyer in anatomy, and Bier and Trendelenburg in surgery, and returned to his country with a large fund of knowledge and skill that laid the foundation for his forty years of brilliant scientific and cultural work.

When he returned to Chile, he became an assistant in the Hospital of San Francisco de Borja, where he stayed until 1925, at which time he was Chief of Surgery. In 1925 he was elected titular faculty professor of the Surgical Clinic and was transferred to the Hospital San Vicente de Paul.

Professor Vargas Salcedo also worked with Dr. Valenzuela Basterrica in the Dental School of the University of Chile, studying oral surgery. When Dr. Basterrica made one of his numerous trips to Europe, Professor Vargas Salcedo was designated as his replacement, and many years later, when there was a vacancy in the school, he was named titular professor of that branch. His favorite students in this school were Doctors Italo Alessandri and Alberto Ralhausen, who, under his direction, formed special technics and became distinguished teachers in this school.

Professor Vargas Salcedo's extraordinary scope of activity in his teaching, in the hospital, and in his private practice, did not prevent his working actively and enthusiastically in the Institute of Physics Education, where he made important contributions.

Professor Vargas Salcedo received many honorable titles of a scientific-cultural character. Professors Vargas Salcedo and Monckeberg were designated as delegates from Chile to the Spanish-American Congress of Medical Sciences in Seville in 1924. Both received the highest distinction of civil order that is given in Spain to those who have distinguished

themselves in intellectual activities, the decoration of Gentleman of the Civil Order of Alfonso XII, bestowed on them by King Alfonso XIII in a moving ceremony. This distinction was especially memorable, because these two Chilean delegates and the Argentinian Professor Houssay were the only members to be so honored.

Years later, Professor Vargas Salcedo was the Chilean Relator of the 10th Congress of Surgery of Buenos Aires, speaking on "Raquianestesia." In 1942 he was President of the First Interamerican Congress of Surgery, held in Santiago. For a time he held the presidency of the Surgical Society of Chile, was Vice-President of the Chilean-Argentinian Institute of Culture (in which capacity he worked energetically for cordial relations between Chile and Argentina).

On the numerous trips which Professor Vargas Salcedo made to the old and the new world, he was honored by a series of diplomas, which afforded him the following titles:

Member of the Royal Academy of Medicine of Madrid (1925)
Honorary Member of the Brazilian College of Surgeons
National Academy of Medicine of Rio de Janeiro (1938)
Foreign Corresponding Member of the Society of Surgery of Buenos Aires (1938)
Member of the National Academy of Surgery of Rosario (1935)
Honorary Member of the Society of Surgery of La Paz (1942)
Honorary Member of the Peruvian Academy of Surgery
Member of the American College of Surgeons

In Chile he held the following titles:

Titular associate of the Society of Surgery of Chile
Honorary member of the Society of Surgeons of Chile
Honorary and titular member of the Medical Society of Chile, holding the presidency of this organization at two different periods.

He published many works that showed his love of scientific accuracy as well as his easy command of language.

In his teaching activities, Professor Vargas Salcedo exercised simplicity and understanding, and took special care to avoid humiliating students who sought his advice or committed errors. When criticism was necessary, it was given privately, and gently. Thus he won their esteem and respect, and his memory will be cherished by all who studied under him.

In his treatment of the sick, he showed the same understanding of human needs and weaknesses. His first thought was always for the welfare of others, and his entire life was devoted to serving suffering humanity.

He joyed in the triumphs of his collaborators, receiving vicarious pleasure from the honors accorded them. On the day he gave the examination for professor of clinical surgery to Dr. Italo Alessandri, he felt the same pride and joy that a father has in a worthy son. The candidate gave a brilliant exposition and received felicitations from faculty professors, doctors, alumni, and various distinguished Argentinian professors present.

Professor Vargas Salcedo was known as a fine raconteur, and had an immense fund of anecdotes for any occasion. He loved to travel, got the most out of everything he saw, and wrote fascinating letters concerning his trips to his friends.

Professor Luis Vargas Salcedo went to his grave after a beautifully-fulfilled life, for which he will be remembered gratefully and lovingly by his students, patients, colleagues and friends. His forty years of professional activity, thirty-five of them devoted to teaching, have earned him a place of honor with other great pioneers in the field of surgery, and have added to Chile's fame and prestige.

NEW BOOKS

Earlier mention has been made in these pages of the importance in the medical student's curriculum of the often-neglected history of medicine. In view of the fact that the material to be covered during the years of medical school increases steadily, it seems, unfortunately, inevitable that this phase of study should be slighted.

The story of Man's attempt to conquer pain goes back, naturally, into the dim mists of antiquity. In **Victor Robinson's** new history of anesthesia, **Victory Over Pain,**[1] these early beginnings are detailed with an appreciative understanding of their importance both to their own day and to ours. With no less insight, the author leads his readers gradually through the maze of alchemy, superstition, pseudo-science and true scientific investigation that foreshadowed the discovery of ether anesthesia. Considerable space is devoted to the dramatic event and incidents which surrounded and immediately followed this epochal advance . . . the bickerings, the greed and recriminations, the downright dishonesty, which besmirched and disgraced America's first great contribution to medicine. Up to that day, mature Europe had been the teacher and leader of the "upstart" western world. When Morton's results became known, these positions were reversed; Europe became the eager student, America the teacher. It is tragic that so much wholly admirable work that was done in those middle years of the nineteenth century on both sides of the Atlantic, along the battle front of the campaign against human suffering, should have been beclouded and obscured by the jealousy of such men as Morton and Jackson.

Actually, the discovery of ether anesthesia, important though it was in itself, was only the opening wedge. It was followed by countless related discoveries that have given us today a large armamentarium for the prevention of human suffering, especially under surgery. These include chloroform; "twilight sleep"; caudal, endotracheal, rectal, intravenous, spinal and refrigeration anesthesias; and the newest agent, curare. The author presents them all, in their logical order, together with related material on the men whose names are inextricably associated with each.

The style in which this book is written is delightful, both scientifically sound and thoroughly readable. It is the logical result of the continued efforts of a man to whom the history of medicine in all its branches has become a life work. One hesitates to apply the adjective "scholarly" to so completely human a text, yet such it surely is in addition to its other virtues. The illustrations, some of which will already be familiar to the reader, are well-chosen and beautifully reproduced. Special mention should be made of the Epilogue, "Musings by the Nameless Monument," which was inspired by the fact that this year marks the centenary of the discovery of ether anesthesia. There are also an excellent "Selected and Annotated Bibliography" and a careful, though somewhat brief, subject index.

This book is wholeheartedly recommended as an addition to every physician's personal library, regardless of his previous knowledge of the history of anesthesia.

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[1] Victory over Pain, by Victor Robinson, M.D. Henry Schuman, New York City, 1946. 338 pp., illus. $3.50.

As slow and laborious as his trip up the muddy Yangtze to Changsha in Hunan province was **Edward Hume's** progress in establishing a hospital and medical school in China. His story, told in a remarkably simple and modest way in **Doctors East, Doctors West,**[2] is not only an amusing, sympathetic, and fascinating tale of the many difficulties he encountered and the many strange superstitions and customs which threatened his mission at every turn; it could also serve as a guide in cementing cordial relations between peoples of different nations and beliefs. Edward Hume closes his book with this comment: "Only those can enter effectively into her life who approach China's citadel by the way of friendship."

It was undoubtedly his sincere efforts to learn their ways and become as nearly one of them as possible that crowned with eventual success Dr. Hume's task of educating the Chinese to modern scientific methods, and of building a medical center. When this aim was at last realized, the management of the center was turned over to the Chinese, in order to make it an independent national project.

The sacrifices he found it necessary to make, both in his scientific methods and his humanitarian desire to do all possible for his patients, must have discouraged him grievously at times, yet he was never embittered by them nor prevented from continuing his work. His difficulties are described in a casual, often humorous way, which reveals the courageous spirit and indomitable patience of a man who can make light of problems that would destroy a lesser individual.

To the medical man there are many interesting sidelights on the Chinese concept of diagnosis and treatment as they were regarded at the time Dr. Hume went to China. For example, Chinese medical legend taught diagnosis by pulse readings, in which the six pulse points, three on each wrist, each represented a different part or organ of the body. Dr. Hume lost his first important patient in Changsha by neglecting to feel the right as well as the left pulse.

At the same time, it was frequently mystifying to find that the Chinese doctors often made quite accurate diagnoses by their superstition-swathed methods, and of all the things Dr. Hume learned during his years in China, one of the most important was to respect the people themselves and the teachings of the ancient philosophers.

Doctors East, Doctors West gives a good picture of political and social changes in China during the last forty years . . . changes in which Dr. Hume was often actively involved, occasionally to his peril. It is illustrated with photographs of persons and surroundings with which Dr. Hume worked.

Medical men and the laity alike will find this book highly readable, for it is the modest revelation of what is possible for one man to accomplish in the face of tremendous odds, and is written in a simple, unpretentious, entertaining style.

Each chapter is headed by a proverb from the Chinese, well worth reading and remembering. The first, also used as the title of the Epilogue, reads: "The way is

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[2] Doctors East, Doctors West, by Edward H. Hume, M.D. Winner of Norton Medical Award. W. W. Norton & Co., Inc., New York, N. Y., 1946. 278 pp., $3.00.

one, the winds blow together." It is the theme of Dr. Hume's entire life—the brotherhood of man, and the struggle for peace among all nations. Brotherhood with the Chinese Dr. Hume achieved for himself through unselfish service, living an example that is well worth following.

The difficulty of any biographer's task is naturally in direct proportion to the attitude taken by the biographee during his lifetime toward the possibility of such a book being written after his death. If he is unaware of his value to posterity, he leaves discouragingly little for the biographer to work with; if he is vain of his achievements, he may give the biographer a monumental task in selecting and eliminating from the voluminous quantities of data available. If, however, he is one of those rare individuals who is becomingly modest yet impersonally aware of his importance to posterity, the biographer's work is happy indeed. To the last category **Harvey Cushing** [3] belongs.

When **Dr. John Fulton** undertook the preparation of this official biography, he was supplied in methodical and orderly array with a vast number of books, papers, letters, notebooks, sketches, photographs and other material; a far less skilled writer could scarcely have failed to produce a book of lasting interest and value.

It seems significant that Dr. Cushing should have been associated, in a sort of junior capacity, with such a man as Sir William Osler, in view of the fact that he became probably fully as great in his own way as his mentor. Osler had a profound effect upon Cushing during their many contacts, at Johns Hopkins and elsewhere; together, they influenced American medicine for generations to come.

A great surgeon, with a keen sense of humor and a sympathetic heart, the needs of others were always paramount to Cushing's own desires and ambitions. His artistic talent was considerable, and is revealed in the sketches in his student notebooks, in his illustrated letters, in detailed drawings entered in his case histories, in charming pictorial comments on his many journeys. Quantities of these sketches are included in Dr. Fulton's book, as are also many photographs of Dr. Cushing and his family, friends, and associates.

This tremendous volume has been so carefully prepared that it should have pleased even the fastidious taste of Dr. Cushing himself. Designed primarily for the information and instruction of the medical student, it is so arranged and presented as to appeal to anyone interested in medical matters. The general format is pleasing and attractive, and a detailed subject index gives ready reference to any subject discussed. Appendix A gives excerpts from Dr. Cushing's will which pertain to the preparation of the biography and the disposition of his large library, as well as certain financial bequests, which were given to Yale University. Appendix B lists his numerous honors and degrees.

This brilliant and distinguished biography about a world-famous American surgeon who preferred to be known simply as "a good doctor" is unreservedly recommended.

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[3] Harvey Cushing, a Biography. John F. Fulton, M.D. Charles C. Thomas, Springfield, Ill., 1946. 754 pp., 150 illus. $5.00.

Modern surgery and modern hospitals have developed, hand in hand with and interdependent on, the development of nursing as a profession for women.

But while hospitalization is as old as the history of man, older than Confucius and older than the Bible, organized and intelligent nursing has come into its own only within the last hundred years. **Victor Robinson** considers that the history of nursing is a chronicle of the emancipation of women, an evolution which has taken place almost within our time.

In **White Caps,**[4] he develops this history through the lives of the heroic women who battled for humanity as well as for their own emancipation: Florence Nightingale, Clara Barton, Elizabeth Blackwell, Dorothea Dix, Mother Byckerdyke, Edith Cavell—and scores of others sung and unsung, who battled not only against death and disease, but against prejudice and puritanism, bigotry and conceit.

As delightful to read as a romantic novel, **White Caps** is a definitive and fascinating study, tracing the story of nursing back to pre-Biblical times, through the dark ages and the brutal wars to our own day, when, at last, as a result of its splendid service in World War II, the nursing profession has gained the respect and prestige to which it is entitled.

The book is thoroughly indexed, with a chronological table of events and biographies of contributors to the development of the profession, and is well illustrated. The volume is one which should find a place in every hospital and nursing school library, and will appeal to everyone who enjoys history well-presented.

Though marred somewhat by a lack of literary polish, like so many similar otherwise excellent books, **Dr. Thurman's Rice's** new book, **Sex, Marriage, and Family,**[5] gives good evidence of his years of experience in medical school teaching, Board of Health work and lectures before Parent-Teacher associations and like groups. That he speaks sincerely, plainly and with authority is without question; that what he says is true and valuable cannot be doubted. Therefore, any literary deficiencies of the book should loom less large in comparison with its undeniable merit and importance.

Possibly the best feature of this study is the section devoted to the specialized problems resulting from war marriages—a relatively new subject, and one that has been much discussed, but rarely by one so competent as Dr. Rice. Much ground has been covered other than the purely physical aspects of marriage, ranging all the way from marital economics to a philosophy of life. Dr. Rice's approach to his subject is at all times unbiased and reverent. He manages to deal very competently with the subject of birth control without becoming entangled with controversial opinions on this subject.

Not this book, nor any other published so far, has expressed the last word on this most vital of all human relationships. However, Dr. Rice's book is a strong step forward, being a reliable, wholesome, and worthwhile discussion of the subject. It is unhesitatingly recommended directly to the laity and to physicians as suggested reading for their patients.

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[4] White Caps, The Story of Nursing. Victor Robinson, M.D., Professor of History of Medicine, Temple University School of Medicine. 425 pp., 24 illus. J. B. Lippincott Company, Philadelphia, 1946. $3.75.

[5] Sex, Marriage, and Family. Thurman Rice, M.D. J. B. Lippincott Company, Philadelphia, 1946. 272 pp. $2.50.

The **Manual of Diagnosis and Management of Peripheral Nerve Injuries,**[6] by **Dr. Robert A. Groff** and **Sara Jane Houtz,** is based on personal experiences of the authors in an army hospital at the Assam-Burma border where bamboo bashas served as wards. This highly instructive, simply written and beautifully illustrated manual provides the physician and the physical therapist with a concise text for the understanding, identification, and management of injuries to the peripheral nerves. The clear and detailed description of all technical procedures enhances its value, and action diagrams featuring the functions of the muscles facilitate the ready understanding of the problems involved.

The neurosurgical and therapeutic judgment with regard to controversial issues is sound. Autografting is recommended as a satisfactory method of repairing extensive nerve defects; nerve flap repairs are condemned. For plasma clot repair a simplified method is described.

In general, the authors state, nerve injuries should be observed for a period of from four to six weeks. During this time weekly examinations, including electrical tests, should be made and physical therapy applied. If, at the end of this time, a complete paralysis has shown signs of degeneration by electrical reactions, or a partial paralysis has regressed, the nerve should be explored. Although some possibility exists that nerve function may return, the authors consider it better to explore a normal nerve than to let an injured nerve go on to the point of irreparable damage. By adopting this principle, treatment will have been performed earlier in those nerves that require surgery, and the disability from these lesions will be considerably lessened.

A thoroughly competent work, this manual is unreservedly recommended for the use of all physicians whose practice involves the diagnosis and treatment of injuries to the peripheral nerves.

Increasing interest in allergy is manifested by the fact that the first edition of **Allergy,**[7] by **Erich Urbach** and **Philip M. Gottlieb,** was exhausted less than three years following its first appearance, and that, though of monumental proportions, it has been fully translated into Spanish and Portuguese. One of the most scholarly and comprehensive treatments of this subject ever compiled, it has become a standard work in the field.

The second edition, now published, is a thorough revision of the previous work. Obsolete material has been eliminated, and new sections on the Rh factor, allergic bronchitis, allergic cough, eosinophilic erythredema, and psychosomatic aspects of allergy have been added. The most recent literature has been searched to provide up-to-date information on allergies resulting from the use of sulfonamides, penicillin and thiouracil, on endogenous allergy, migraine, toxic and allergic contact dermatitis, sensitivity to human plasma, asthma, methods of testing, and demonstration of cellular antibodies in allergic dermatitis. Complete lists of concentrations used in patch testing have been included.

The references to literature have been augmented by 1,300 new references, making a total of 3,323.

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[6] Manual of Diagnosis and Management of Peripheral Nerve Injuries. Robert A. Groff, M.D., and Sara Jane Houtz, B.S. J. B. Lippincott Company, Philadelphia, 1945. 188 pp.

[7] Allergy, 2nd edition. Erich Urbach and Philip M. Gottlieb. Grune & Stratton, New York, 1946. 968 pp. 412 illus., numerous tables.

Material has been well-organized under three headings: Fundamentals of Allergy, Etiologic Agents of Allergic Diseases, and Symptomatology and Therapy of Allergic Diseases.

The double-column format admits of inclusion of a tremendous amount of material in relatively few pages; the numerous tables and illustrations enhance the informative value of the text. Clinical record forms, tables for concentration and for vehicles for use in patch testing are included in the appendix. Carefully compiled author and subject indices conclude the volume.

As a reference volume, **Allergy** is of inestimable value to dermatologists, internists, pediatricians, allergists, clinical pathologists, biochemists, experts in nutrition and metabolic diseases, and general practitioners.

This small volume of essays, from the pen of a Fellow of the International College of Surgeons, reveals its author as far more than a surgeon of international repute. In **A Surgeon Looks at Life,**[8] **Richard A. Leonardo** shows himself to be historian, philosopher, and theologian. Especially evident is his familiarity with diverse phases of each subject he treats and his broad understanding of basic human needs and problems. The simplicity of his language is in itself impressive; for it reveals him as a man who, though broad-minded, is not too broad-minded to have opinions—strong opinions which he is able to substantiate without ambiguous phraseology or ultra-intellectual rhetoric.

One is reminded of similar essays by Sir William Osler and Sir Walter Langdon-Brown; like all truly intellectual men, their words are easily understandable, and therefore memorable. Dr. Leonardo employs the same historical approach, engages in philosophical reflections, and records his thoughts with the same simple ease and economy of words.

His judgments are convincing, and the fields he covers diverse. Among the subjects he discusses with complete candor and authority are: "Churchman and Doctor," "Psychological Medicine," "Birth Control," "Euthanasia," "The Right to Die," "Juvenile Delinquency," "Man's Final Gift," and "Life After Death."

Concerning "Birth Control," he says, in part: "Social unrest, marital discord, guilt, divorce and frustration, singly or in combination, are the price of unrestrained birth control. Generation of life, satisfaction of having fulfilled a personal destiny, and a consequent feeling of oneness with the eternal stream of life, is the reward of having lived in conformity with Nature's laws, and is the privilege of every living creature."

In his deeply sincere essay on "Juvenile Delinquency," he inquires of the parents if they have "the moral fibre necessary to regain family control of our youth, and instill in them a love of freedom and a scorn of license."

Dr. Leonardo's obvious sincerity, coupled with his wide experience and renowned ability, make this book an informative and convincing discussion of many phases of existence which are too often dealt with feebly or not at all. His sound religious approach, coming from a highly scientific mind, is a refreshing and thought-provoking antidote to present-day cynicism and technical-minded modern living.

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[8] A Surgeon Looks at Life, by Richard A. Leonardo, M.D., Ch.M., F.I.C.S. Froben Press, New York, N. Y., 1945. 128 pp.

NEWS NOTES

The Hon. Norman M. Littell

Norman Mather Littell, who has recently consented to act as legal counsel for the International College of Surgeons, brings to us a wealth of solid practical experience, and a rich background in culture and education. Formerly Assistant Attorney General of the United States in charge of the Lands Division, he parted company with Attorney General Biddle on Nov. 30, 1944, during that famous controversy, as a result of his protesting special influence in the settlement of cases in the Department of Justice to the prejudice of public interest.

Born in Indianapolis, Indiana, September 8, 1899, Mr. Littell was the son of a Presbyterian clergyman, Dr. Joseph Littell, and Clara Munger Littell. He received his A.B. degree from Wabash College at Crawfordsville, Indiana, in 1921; from there he went to Oxford as a Rhodes Scholar, attended the School of Modern History in Christ Church College, and received a B.A. degree in 1924.

During Oxford's long vacations he travelled extensively on the Continent, stumped in England for the League of Nations, and in the summer of 1923 served as foreign correspondent for the Philadelphia Public Ledger Foreign News Service at the League of Nations in Geneva.

Returning to the United States in 1924, he entered Harvard University Law School, but was forced to interrupt his studies because of ill health. During the period of recuperation, he shipped on a round-the-world trip as seaman on a tramp freighter, and spent a year in the woods of western Washington, working as a logger at the Long Bell Lumber Company camp. This rugged existence not only restored his health but gave him a love for the Pacific Northwest which led him to finish his law studies at the University of Washington Law School in Seattle. There he received his LL.B. degree in 1929. He was admitted to the bar in Washington the same year and became an associate in the law firm of Bogle, Bogle and Cates in Seattle, where he remained until 1934. His first case in the Federal Courts became one of the most historically significant and interesting cases in his exciting career. This first case, the *Alaska Steamship Co. vs. the United States*, 290 *U. S.* 256, in which Littell opposed the U. S. government, eventually reached the Supreme Court of the United States. The question—who was liable for the expenses of repatriating shipwrecked American seamen under United States law—was a novel one, and Littell's exhaustive research on the subject won for him a statement from the Supreme Court

referring to the "diligence of counsel in examining the ancient authorities." This case, in which the lower courts held for the government, was resolved in favor of the Alaska Steamship Company after Littell's argument before the Supreme Court.

It was during the trial of this case in Washing that Littell was asked to join the staff of the Administrator of Petroleum Code as an Assistant Solicitor in the Department of the Interior. He declined to leave the Northwest, but in March, 1934, he became Special Assistant to the United States Attorney General, and Assistant Solicitor, Department of Interior, representing Administrator of Petroleum Code and Pacific Coast Petroleum Agency in Northwest states, a position which he held for one and one-half years. In 1936 he became a partner in the law firm of Evans, McLaren, and Littell, Seattle.

He was engaged as a special United States Attorney in handling the great Northern Pacific case, which grew out of a land grant of over 40,000,000 acres to the railroad in 1864. This was the largest case in the history of the Federal courts, including in its scope and complexity some twenty-two different law suits involving some three million acres of every conceivable kind of land in Wyoming, Montana, Idaho, Washington and Oregon, and including twenty-six national forests. He reorganized this case under Assistant Attorney General Blair, reassigned the legal staff in Washington, and undertook the appraisal of this vast expanse of land.

A major issue in the case was whether the lands could be claimed by the railroad as "agricultural" even though not "cultivable," embracing as they did millions of dollars worth of timber lands. Littell argued that "agricultural" meant "cultivable" or "capable of settlement"; this contention was overruled in the District Court, but was upheld in the United States Supreme Court. All other issues in this case were argued by Edward McClennen, former law partner of Justice Brandeis, whom Littell (by this time Assistant Attorney General) had retained especially for this monumental task.

In 1939, Littell was persuaded, over his reluctance to leave the Northwest, to go to Washington as Assistant Attorney General of the United States in charge of the Lands Division of the Department of Justice. In this position he served from 1939–40 as chairman of the President's Interdepartmental Committee on Submerged Oil Lands along the coastline of the United States, and in 1941 and 1942 exposed the land scandal in acquisition of military sites and effected reorganization of the War Department and Navy Department Real Estate Sections. His analysis of the contract for the exploitation of the Elk Hills Naval Petroleum Reserve in California, in 1943, resulted in its repudiation as illegal and invalid, thereby saving the government many millions of dollars and the Navy Department many million barrels of oil. He appeared before the Truman Committee investigating war activities on a number of occasions, in each one of which they followed, wholly or in part, his testimony in their final reports. His handling of the work was praised in the report of the Department of Justice March 3, 1943. He assisted in drafting the War Powers Act, and other acts to facilitate acquisition of property for the war effort and to expedite payment to property owners, and was commended by the Senate War Investigating Committee in March, 1944, for his direction of the land acquisition program during the war years. His tremendous work in this program included the drafting of eight bills to submit to Congress; six of these bills are law today.

In addition to the Alaska Steamship Company case, Mr. Littell has argued the following significant cases in the Supreme Court of the United States: *United States vs. Alabama, 213 U.S. 274* (1941); *United States vs. San Francisco, 310 U.S. 16* (1940); *United States vs. Chicago, Milwaukee & St. Paul Railroad Company, 312 U.S. 274* (1941); *United States vs. Miller, 317 U.S. 369* (1943); *United States vs. Northern Pacific Railway Company, 311 U.S. 317* (1940); and *United States vs. Waterhouse, 321 U.S. 743* (1944).

Mr. Littell is President and Director for the Potomac Area of the American Youth Hostels, Washington, D. C.; Director of the Society for the Prevention of World War III; a member of the War Hospitality Committee, Washington, D. C.; and a member of Beta Theta Pi and Tau Kappa Epsilon fraternities.

Mr. Littell returned to private law practice in Washington, D. C., in 1944, doing general corporation practice in the federal courts and before agencies of the federal government. The International College of Surgeons is indeed fortunate to be represented by a man of such undeniable ability, experience and oustanding success in his chosen profession.

Charles H. Arnold, M.D., F.I.C.S., one of the most staunch and devoted Fellows of the College, has, together with Mrs. Arnold, recently left his home in Lincoln, Nebraska, to take up residence in China. Dr. Arnold has long dreamed of going to China as a teacher; connections made during his trip to England some time ago have now resulted in his appointment to the West China Union University, located near the Tibetan border, not far from Chungking. The length of his stay will be governed, he says, by his "ability to make a worthwhile contribution." He adds: "It seems there is a glorious opportunity to render a truly worthwhile service. They have an enrollment of 600 students there in the Dental and Medical School. It is a fully accredited school and graduates from this University have gone out to the other schools in China as instructors in those institutions." While there his address will be c/o Surgical Department, Medical College, West China Union University, Chengtu, Szechwan, China. The sincere and heartfelt good wishes of every Fellow and Member of the College goes with "Charlie" in this truly great and unselfish effort to help a courageous and fine people to help themselves. May his example inspire others to go and do likewise!

PERU

The Peruvian Academy of Surgery has named its new Directive Council, which will govern all affairs of importance in the course of the year that follows. The new Council is composed of the following members: President, Dr. Francisco Villa García; First Vice-President, Dr. Alberto Sabogal; Second Vice-President, Dr. Amador Marino Reyna; General Secretary, Dr. César Heraud; Recording Secretary, Dr. Carlos A. Protzel; Secretary of Scientific Records, Dr. Marcelino Castellares; Treasurer, Dr. Gerardo Lozada; Librarian, Dr. Alejandro Higginson; Director of Publications, Dr. Enrique Camprubi; Lectures, Dr. Victor M. Bazul, Dr. José S. Gamero, Dr. Adolfo Chipoco, Dr. Alfredo Curotto and Dr. Luís M. Delgado.

BOLIVIA

Dr. Enrique Hertzog, ex-minister and ex-director of the School of Medicine of the Superior University of San Andres of La Paz, Bolivia, has been designated foreign corresponding member of the Medical Society of the General Hospital of Mexico.

BRAZIL

The distinguished Brazilian surgeon, **Dr. Miguel Leuzzi** of São Paulo, has been traveling and studying in Mexico.

The Brazilian College of Surgeons has elected as corresponding foreign members three distinguished Cuban colleagues: **Dr. Ricardo Núñez Portuondo,** F.I.C.S. (Hon.), **Dr. José Lastra,** F.I.C.S., and **Dr. Antonio Rodríguez Díaz,** F.I.C.S., of Havana; and also the Venezuelan surgeon, **Dr. Miguel Pérez Carreño,** F.I.C.S., of Caracas.

COSTA RICA

Dr. Miguel Angel Grillo, F.I.C.S., of the Costa Rican Chapter, member of the International Board of Trustees, was designated by the government of Costa Rica as Ambassador Extraordinary and Plenipotentiary, Chief of the Special Embassy to the inauguration of the new president of Mexico, Miguel Alemán.

ARGENTINA

Under the patronage of the Faculty of Medicine of Córdoba, Argentina, **Dr. Pablo L. Mirizzi,** F.I.C.S. (Hon.), International Vice-President of the College, who occupies the chair of surgery of the Faculty, will give a course for postgraduates from May 2 to 14, 1947. His program will be devoted entirely to biliary lithiasis.

MEXICO

Dr. Francisco Cid Fierro, F.I.C.S., National Secretary of the Mexican Chapter of the International College of Surgeons, has been appointed Medical Consultant for the Mexican National Railways.

Dr. Roberto O. Romero, F.I.C.S., has been appointed Director of Child Welfare of the Secretariat of Health and Public Aid of Mexico.

Dr. Gustavo Argil, F.I.C.S. (H.C.), has been appointed Head of the Secretariat of Health and Assistance in Mexico, and **Dr. Esteban Paulin,** F.I.C.S., was appointed Director of Public Aid.

Dr. Mario Quiñones Huertero, F.I.C.S., has been appointed Assistant to the Chief of the Medical Services of Social Security of Mexico.

Dr. Francisco Castillo Nájera, F.I.C.S. (Hon.), Secretary of Foreign Relations of the United States of Mexico, has been elected a general member of the Mexican Language Academy. He was also recently designated Chief of the Mexican Delegation to the Assembly of the United Nations, and Chief of the Mexican Delegation to the inauguration of the new President of the Republic of Chile, with the title of Ambassador Extraordinary on Special Mission. He has been decorated with the Cross of the Order of Quetzal by the government of Guatemala.

The new Executive Council of the Mexican Chapter of the International College of Surgeons have taken office, and will serve until 1948. They are: President, **Dr. Raúl A. Chavira;** Vice-President, **Dr. Antonio Torres Estrada;** Secretary, **Dr. Francisco Cid Fierro;** Treasurer, **Dr. Juan Mora. Doctors Gonzalo Castañeda** and **Fernando Quiroz** were designated Regent Specialists in the fields of general surgery and genitourinary surgery, respectively, for the Mexican Chapter. *Note: Word has just been received of the untimely and sudden death of Dr. Castañeda. Further details will be given in our next issue.*

Dr. Manuel A. Manzanilla, F.I.C.S. (Hon.), of Mexico, International Vice-President of the International College of Surgeons, has been elected President of the Correlation Committee of the Mexican National Academy of Sciences.

Dr. Raúl A. Chavira, F.I.C.S., President of the Mexican Chapter of the College, has celebrated his 25th professional anniversary.

Dr. Manuel Márquez R., F.I.C.S., of Mexico, has been appointed a member of the Embassy Extraordinary of the Spanish Republic, to the inauguration of the President-Elect of Mexico, Miguel Alemán.

Three members of the International College of Surgeons have been received into the National Academy of Sciences of Mexico: **Dr. Francisco Graña,** F.I.C.S., Lima, Peru, President-Elect of the College; **Dr. Enrique St. Loup B.,** F.I.C.S., La Paz, Bolivia, member of the International Board of Trustees; and **Dr. Salvador Cordoba,** F.I.C.S., Caracas, Venezuela.

VENEZUELA

Doctors Cruz Lepage and **Félix Lairet** of the Venezuelan Chapter of the International College of Surgeons have been designated, respectively, President and Vice-President of the Society of Gynecology and Obstetrics of Caracas.

The National Academy of Medicine of Caracas has unanimously elected, as corresponding members in Mexico, **Doctors Manuel A. Manzanilla,** International Vice-President of the I.C.S., **Francisco Fonseca** and **Miguel López,** members of the Mexican Chapter.

Sección en Español

El bocio carencial de la infancia*

ENRIQUE ST. LOUP B., F.A.C.S., F.I.C.S.†

ENTRE las distintas formas de bocio, hay indudablemente una que, si bien ha sido observada y mencionada, no ha merecido hasta ahora—que yo sepa—un estudio especial, pareciendo haber bastado con atribuirla ya a un proceso casi normal de hiperplasia en el curso del desarrollo, ya a la endemia relacionada con la falta de yodo, o simplemente a la incidencia en edad temprana de las mismas tiroideopatías que afligen al adulto. Nos referimos a cierto bocio encontrado en los niños. En efecto, fuera de lo descrito con el nombre de "bocio de la adolescencia," por creerlo exclusivo de esa edad, sólo se encuentran menciones que no llegan a nuestro juicio, a relacionar el asunto a su verdadera causa o lo que es igual, a darnos un conocimiento cabal.

A parte del interés cientifico, que de suyo justificaría la dedicación, ofrece el asunto innegable interés médico-social, motivos ambos que me han animado a presentarlo como una proposición para que otros, con mayor capacidad y adecuados medios, se encarguen de llevar a cabo su estudio.

La afección fué encontrada principalmente en comunidades de niños sujetos al mismo régimen de vida, lo que me indujo a denominarla "bocio de los orfelinatos" en el primer trabajo que publiqué con este motivo.[12] Su mayor incidencia corresponde al sexo femenino, y en cuanto a la edad, se la ve en niños desde los 4 años, estando su mayor frecuencia entre los 9 y los 14 años. (Fig. 1.)

La manifestación principal, y a veces la única sobre todo al comienzo, es el aumento de volumen del tiroides, que de inaccesible a la palpación que normalmente es, se torna palpable y aun visible. Cuando el aumento no es notorio, puede pasar inadvertido, y entonces, para hacerlo evidente hay que poner al sujeto que se examina con la cabeza en mediana extensión, haciéndole inclinar al lado opuesto del lóbulo que se trata de palpar. Para facilidad de la descripción sinóptica, designaremos

Fig. 1. Niño de 5 años. Tipo II.

Fig. 2. Seis años: apatía y retardo mental.

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como tipo I a aquel aumento glandular accesible únicamente a la palpación; como tipo II, al que además ya es visible, y por último tipo III, al franco estado de bocio. La consistencia es por lo general blanda y uniforme, pudiendo tornarse elástica con el progreso de la afección o por influjo de ciertos medicamentos como el lugol o la tiroidina, cuando son indebidamente administrados. A veces, aunque raras, presentan lobulaciones, y una vez, en una niña de 8 años encontramos la glándula animada de latidos expansivos y con franco soplo.

Fig. 3. Ocho años de edad: tumoración pulsátil, con soplos y M.B. de más 20 por ciento.

En cuanto al pulso, se vé que en los niños en que la afección data de poco tiempo, no hay alteración, en tanto que entre los que han tenido notorio el bocio desde más de un año, por lo general está modificado en sentido del aumento, 95 a 115 pulsaciones; disminución alrededor de 65, en menor proporción; y variable e inestable en raros casos. El reflejo oculo-cardíaco, sin nada de característico, es por lo general positivo.

En ninguno de los casos se presentó exoftalmia, ni signo ocular alguno de los que denotan hipertonía del párpado superior. Tampoco se observó temblor. Seis veces se vieron pigmentaciones, y en un caso se pudo observar el signo de Jollineck claramente.

Respecto al metabolismo basal, se han encontrado valores desde menos 18 por ciento hasta de más 33 por ciento, en niños de ocho años para arriba; en los menores no fué posible esta determinación, excepto en un caso, de niño de 5 años, en que notándose nervosismo, inquietud, fenómenos vaso-motores y peso de 20 kg. estacionario, el metabolismo basal sólo alcanzaba a la cifra de +2 por ciento.

En 9 por ciento de los 280 primero examinados se descubrió inquietud, nervosismo, irritabilidad, manos cálidas y húmedas y otros fenómenos vaso-motores. Por otra parte en 7.4 por ciento se observó retardo físico y mental, piel seca y áspera, a veces afectada de eczema, cabellos opacos, secos, y uñas quebradizas con acanaladuras. Eran niños apáticos, friolentos, tardíos, de estatura baja en relación a su edad, de inteligencia embotada, algunos francamente oligofrénicos. En las muchachas de catorce años, en una proporción de 47 por ciento, la menstruación aun no se había presentado.

Se vé pues en definitiva, que si bien en la mayoría de los examinados las cosas se reducian a un aumento de volumen del tiroides, en algunos iban diseñándose claros rasgos de hipertiroidismo, en tanto que en otros, los menos, el hipotiroidismo era innegable.

RELACION CON EL REGIMEN ALIMENTICIO

Ya se ha dicho que este bocio fué encontrado en los orfelinatos, y es allí donde la incidencia aparece mayor. Otros casos aislados que se fueron presentando, correspondían a gente de las clases pobres y descuidadas.

En uno de los asilos primero inspeccionados, en abril de 1944, descontando los lactantes y el personal que cuidaba del establecimiento, la proporción exacta de bociosos era la de 51 por ciento. Ahora bien, el régimen alimenticio en aquel establecimiento derivaba de los pobrísimos elementos consignados en el

CUADRO I

Procedencia	VARONES	MUJERES	CASOS DE BOCIO					TOTAL	PROPORCION
			De 4 a 9 años	De 9 a 14 años	Tipo I	Tipo II	Tipo III		
Asilo Méndez Arcos.....	180	..	6	16	15	7	..	22	12.22%
Asilo Carlos de Villegas....	36	..	12	2	2	5	7	14	33.88%
Asilo Carlos de Villegas.....	..	64	16	22	17	15	6	38	59.375%
Huerfanos de Guerra.....	..	94	5	28	29	4	..	33	35.10%
Asilo Hogar San Jose.....	..	101	6	20	18	8	..	26	25.74%
Colegio de Los S.S.C.C..... (Particular)	..	148	4	7	9	2	..	11	7.43%

Total de examinados.... 623 Total de casos de bocio.. 144 Proporción 23.11%

cuadro adjunto (N° I). Allí no había carne, no había huevos, no había mantequilla. La cantidad de diez litros de leche dividida en 140, entre pupilos y cuidadores, da la cifra de 71.42 mil. como ración individual; pero ni eso es exacto, puesto que es indudable que la leche se destinaría principalmente a las criaturas alimentadas con biberón. La fruta era un regalo eventual. En realidad todo se reducía a una pobre ración de hidratos de carbono y a algunas verduras, a las que todavía la cocción les privaba de su escaso contenido vitamínico.

En otros establecimientos en que además de los cereales, disponían de 22 litros de leche y 15 kilogramos de carne para 104 personas, y en que tenían un poco de fruta una vez por semana, la incidencia era de 32 por ciento.

En cambio, en los colegios en que el alumnado, perteneciente a las clases acomodadas, tenía mejor alimentación, la incidencia encontrada fué de 7.43 por ciento.

Importante es tener en cuenta que en unas y otras agrupaciones usaban la misma clase de sal y bebían de la misma agua, que es la que abastece a toda la ciudad de La Paz. Resulta pues innegable la relación entre la frecuencia de esta clase de bocio y el régimen alimentício deficiente sobre todo en proteínas y vitaminas.

Fig. 4. Niño de 7 años. Tipo II.

Fig. 5. Doce años de edad; tipo III; M.B. de menos 16.8 por ciento.

Ahora bien, ya es cosa establecida la estrecha relación existente entre la hormona del tiroides y la vitamina A. Un exceso de tiroxina parece que aminora la acción de la vitamina A sobre el desarrolo y no permite su acumulación en el hígado. A su vez la vitamina A tiene una acción frenatriz sobre la tiroxina. Conocida es la experiencia según la cual la metamorfosis de los renacuajos se acelera notablemente con la tiroxina; pues bien, la vitamina A anula esa acción. Por otra parte, la experiencia clínica ha permitido comprobar dos cosas: una, que en los casos de hipertiroidismo hay tal consumo de vitamina A que llega a desaparecer en el suero sanguíneo; y otra, que la administración de grandes dosis de vitamina A en los basedowianos, hace descender la cifra del metabolismo basal.

Lo probable es que no sea sólo la vitamina A la que tenga relación con la hormona del tiroides, sino que sean varias. Desde luego la acción de la vitamina D, parece requerir de la función tiroidea para desarrollarse. Según Nitschke, citado por W. Stepp,[11] el raquitismo experimental, tanto como el expontáneo del niño, mejoran con la administración de tiroides.

OPINIONES ACERCA DE LA ETIOLOGIA DEL BOCIO EN LA INFANCIA

Esta forma de bocio, que por supuesto no podría considerarse como una manifestación del endémico, ha sido observada por otros investigadores, que, salvo menciones de paso, la han relacionado ya con la adolescencia, ya con la falta de yodo. Una de las primeras referencias por mí conocidas, fué la de Arruda Sampaio, citado por Peregrino Jr.[8] que posteriormente a 1940, examinando la población escolar de Sao Paulo del Brasil, encontró que el 18.15 por ciento de los examinados tenía bocio, y que esa incidencia en ciertas localidades escendía a la cifra de 60 por ciento. Los mencionados autores brasileños Peregrino Jr., Armando Peregrino y Amambahy Santos, consideran que se trata simplemente del "bocio de la adolescencia." Posteriormente Israel Bram[1] tratando de los disturbios del tiroides en los menores de dieciseis años, dice: "el bocio esporádico simple de los jóvenes tiene como factores etiológicos la herencia, la infección general o local, dieta defectuosa y una incapacidad manifiesta de la tiroides para responder a las exigencias del desarrollo." Como se vé, Israel Bram sólo de pasada y en último lugar menciona la "dieta defectuosa." Por último, un trabajo del Servicio Cooperativo Inter-americano de Salud Pública del Paraguay aparecido en junio de 1945 en los Anales de la Facultad de Ciencias Médicas de Asunción,[10] con valioso acopio de datos, suministra a mi ver firme asidero a la hipótesis aquí sustentada.

Vemos así que fueron examinados 13,050 escolares cuyas edades se hallaban entre los 6 y 16 años, correspondiendo a "todas las zonas al este del río Paraguay." El porcentaje general de bociosos fué de 28.2 por ciento, siendo el de varones de 26.6 por ciento y el de hembras de 30.04 por ciento. Examinando la distribución geográfica, salta a la vista un interesante dato. En tanto que hay lugares que dan una proporción de afectados entre 18.79 y 53.66 por ciento, existe uno, el Dpto. de San Ignacio en que en 224 examinados, sólo comprobó 4 bociosos, o sea 1.80 por ciento. Ahora bien, el propio autor no deja de señalar que de acuerdo a "la observación popular, los hombres y mujeres paraguayos de mejor contextura física, provienen de dicha región de la república." Y si hay buena contextura física, la alimentación debe ser

CUADRO II

REGIMEN ALIMENTICIO EN UN ORFELINATO

Alimentos	Cantidad para 140 asilados	Carbohidratos	Grasas	Proteinas	Agua	Celulosa	Caloria
Leche de Vaca.....	10,000	480	310	310	8,700	....	5,950
Trigo	3,000	2,286	315	42	243	51	10,782
Arroz	3,000	2,376	228	9	369	6	10,497
Avena	3,000	1,810	468.6	235.2	266.2	66.3	11,232
Quinua	4,000	2,355	224.9	556.38	348.24	....	13,670
Chuño (papa desecada).	2,000	378	53.8	....	1,560	7.8	1,727.2
Azúcar.....	2,000	2,000	....	....	....	....	8,000
Manteca	500	....	420	2.6	76	....	3,792.2
Zanahorias	500	30.25	5.25	....	450	3.8	162
Cebollines	500	15.7	4.1	....	473.5	1.6	79.2
Apio	300	9	3.9	0.6	281.1	2.1	57
Nabos	2,000	23.4	19.2	....	1,918	6.2	170.4
Perejil	200	14.4	7.4	2	167.4	3.6	105.2
Aji	4	0.18	0.05	0.01	3.64	0.06	1.1

mejor. Pero, hay algo aún más convincente. Al referirse a los niños examinados en la capital, se destaca esta impresionante diferencia. En tanto que "en el Barrio Obrero, *en niños de familias pobres*" la proporción de bociosos es de 34.46 por ciento, entre los escolares del centro de la ciudad gente de "posición económica desahogada," apenas alcanza la cifra a 8 por ciento.

No obstante todo esto, el autor aunque reconoce que "la malnutrición y la anquilostomiasis deben constituir factores," acaba por plegarse al concepto clásico, y atribuir la máxima importancia a la "carencia de yodo," hasta el punto de aconsejar como conclusión de su estudio, que se suministren tabletas yodadas a los escolares, como medio de "prevenir el bocio en el Paraguay."

Buscando opiniones de otros observadores, tenemos el reciente trabajo de Pemberton y Marden Black, "Goiter in Children" publicado en noviembre de 1944.[9] Es una revisión de los casos de bocio observados en la Clíica Mayo, en personas de menos de 14 años en un lapso de 35 años. La gran mayoría, 189, corresponde a bocio exoftálmico; 52 a bocio edematoso; 18 a carcinoma, y 3 a tiroiditis. Entre los 52 de adenoma simple están comprendidos los llamados "de la adolescencia," pero sin especificaciones de edad. Los autores sólo dicen que esa afección "es muy rara antes del comienzo de la pubertad." En cuanto al hipertiroidismo, no lo han encontrado nunca acompañando al adenoma, hasta el punto de decir que para ellos hipertiroidismo en niños es sinónimo de bocio exoftálmico. Respecto a su etiología, nada dicen, pero se echa de ver que ellos consideran que estas tiroideopatías no son sino incidencias, en edad temprana, de las mismas formas que ocurren en el adulto.

Suponiendo que esos 52 casos de "bocio ademotosos" o "bocio de la adolescencia," fueran en realidad la forma a que nos estamos refiriendo, tendríamos establecida la extrema rareza de la incidencia ya que se trata de una revisión que comprende 35 años. Ahora bien, tal rareza abona, a mi juicio, las hipótesis aquí sustentadas. En países como los EE. UU., en que se cuida con tanto celo la infancia, no deben darse casos de tan mala nutrición como los aquí mencionados, ni aun en orfelinatos o internados. Es pues elocuente la enorme diferencia que se nota entre la frecuencia observada en el Brasil, Paraguay y Bolivia, con la rareza anotada en los Estados Unidos.

Fig. 6.

Fig. 7.

Fig. 6. Once años; bocio difuso; P. 115–120; M.B. de más 33 por ciento. Disnea, nervosismo, crisis sudorales. Hemitiroidectomía que suministró dematosa, cuyo buen resultado fué objeto de una comuniçación publicada en la "Semana Médica" No. 31 del 5 de agosto de 1943, de Buenos Aires.
Fig. 7. Niña de 6 años; tipo II.

En cuanto a opiniones europeas vale citar la de Finkelstein [5] que hablando de las hiperplasias, confiesa que hay "diferencias por la situación social," pero a continuación establece que "las hiperplasias de los jóvenes en regiones exentas de bocio, son hiperplasias del crecimiento general." El crecimiento rápido parece ser lo primario, la hiperplasia es la consecuencia." Empero, contra esta aserción, tenemos que en nuestros casos había más bien *retardo del desarrollo,* al paso que en los muchachos de desarrollo precoz, no hemos encontrado un sólo caso de aumento del tiroides.

Es más bien en una obra de Nobels y colaboradores [7] que hallamos esta valiosa cita: "Abels de Viena—dice—había observado en 1923 a 1924, un ascenso considerable y pasajero de la frecuencia del bocio en los recién nacidos, y había encontrado cierta analogía con la ola simultánea de bocio en niños y jóvenes suponiendo *la alimentación deficiente como causa, especialmente la falta de vitamina A.*" (En obsequio a la verdad, valga decir que esta cita fué conocida por mi, mucho después de la publicación de mi primer trabajo sobre este asunto.)

UN CONCEPTO UNICISTA

Ante todo vale la pena establecer de una vez por todas si el llamado "bocio de los adolescentes" es una entidad mórbida especial, y aun si es justificada la denominación que lleva. Examinando el asunto, la única razón aducida para ello es *que fué observada primeramente en los adolescentes.* Ahora bien, está visto—y creemos haberlo demostrado—que tal bocio se presenta en niños desde los cinco años, y que su incidencia va aumentando a medida que se acercan a la pubertad. Llamarlo por eso "bocio de la adolescencia" valdría tanto como llamar "bocio femenil" porque la máxima frecuencia se encuentra en la mujer. En todos los períodos del desarrollo y los de intensa actividad endocrina, el organismo exige mayores aportes, y si estos faltan, el tiroides se hipertrofia. Ahora bien, la pubertad es precisamente uno de esos periodos en que la referida glándula ejerce con

mayor actividad su influencia morfogenética.

Asi pues, el bocio encontrado en los niños y el llamado "de los adolescentes" no pueden ser entidades distintas, antes bien son expresiones del mismo transtorno ocasionado por una misma deficiencia. Lo que ocurre es que en la adolescencia hay exceso de requerimientos, y en los niños de los orfelinatos hemos comprobado falta de elementos para abastecer. Escasez de aportes y demanda excesiva confluyen en lo mismo, el empobrecimiento de materiales, y tienen como consecuencia el disturbio glandular.

Cuerdo parece, pues, considerar este bocio como la expresión de una hipertrofia compensatriz, producida por la hormona tireotropa del cuerpo anterior de la hipófisis en su afán de satisfacer las necesidades de yodo del organismo. Si a ello añadimos la acción frenatriz, o más bien reguladora de la vitamina A sobre la troxina, tendremos quizás un asomo de explicación acerca del mecanismo etiológico de la hipertrofia en cuestión. Por supuesto que las cosas deben ser mucho más complejas, pero por el momento no se encuentra mejor explicación.

Queda aun por dilucidar si esta forma de bocio es del todo ajena al hipertiroidismo como por lo general se ha considerado. De nuestros exámenes se deduce que si bien en la mayoria de los

CUADRO III

Regimen Alimenticio en Uno de Los Orfelinatos

Substancias Alimenticias	Cantidad para 140 pupilos	Cantidad por racion	Contenido en Vitaminas				
			A	B_1	B_2	C	D
Necesidad Minima Diaria			400	1500 2000	2000 4000	50	10 400 U.I.
			U.I.	Gamas	Gamas	Mgrs	Gamas
Arroz	3,000 g	21.42 g	....	47	23.5	....	....
Azúcar	2,000 "	14.22 "	....	....	....	....	....
Avena	3,000 "	21.42 "	....	64	....	....	....
Apio	300 "	2.14 "	0.34	....	....	0.30	....
Aji	4 "	0.02 "	....	....	....	....	....
Cebolletas	500 "	3.50 "	....	....	....	1.75	....
Chuño	2,000 "	14.22 "	....	....	....	....	....
Leche de Vaca	10 lts.	71.42 "	71	29.1	142	0.85	0.21
Manteca	500 g	3.50 "	....	....	....	....	....
Nabos	2,000 "	14.22 "	....	5.6	....	2.13	....
Quinua	4,000 "	28.56 "	....	....	....	....	....
Perejil	200 "	1.42 "	....	....	....	....	1.9
Trigo	2,250 "	16... "	....	....	....	....	....
Zanahorias	500 "	3.50 "	240	2	2	0.15	....

casos todo se reducía al aumento de volumen que hemos llamado tipo I, en otros que correspondían a los tipos II y III, encontrábanse nervosismo y frecuencia de pulso, signos que ya bastan, en opinión de Helmholz (citado por Pemberton,[9]) para diagnosticar bocio exoftálmico. En otros todavía se añadían manos cálidas y sudorosas, raya de Marañón, estacionamiento en el peso, pigmentaciones y por último metabolismo basal aumentado, aunque nunca signos oculares.

Por otra parte, en otros casos, se encontraron claros signos de hipotrioidismo, algunos de los cuales al recibir medianas dosis de tiroidina, viraban prontamente hacia el hipertiroidismo, comenzando por la frecuencia del pulso y el endurecimiento de la glándula.

La observación de estos hechos induce a considerar que del bocio simple, el tipo I que hemos dicho, a las formas de hipertiroidismo o distiroidismo, no media sino una cuestión de estadio, de mayor tiempo de acción de las causas que provocaron la primitiva hiperplasia. En cambio la modificación del régimen alimenticio, aun sin llegar a un grado satisfactorio, nos permitió comprobar al cabo de algunos meses, francas regresiones y aún desaparición total de la hiperplasia. A la dieta mejorada, se agregaron dosis altas de vitamina A (25 a 50 mil unidades diarias) en la mayoria de los casos. Otras experiencias con sólo administración de vitamina A o D, están aún efectuándose, y naturalmente nada se puede adelantar.

RESUMEN

Se describe una forma de bocio, no endémico, encontrado entre niños de 4 a 14 años, asilados en orfelinatos donde el régimen alimenticio es deficiente y hasta carente de los principios nutritivos básicos y de vitaminas.

Descartadas otras causas, y dada tan manifiesta dependencia, se atribuye a dicha insuficiente nutrición la hiperplasia tiroidea y se menciona la relación existente entre la hormona del tiroides y la vitamina A, especialmente.

Se hacen consideraciones diagnósticas entre este bocio y las formas comunmente descritas, con especial referencia al llamado "bocio de los adolescentes", insinuando la hipótesis de que se tratara de una misma afección, cuya mayor frecuencia en las proximidades de la pubertad, se explicaria porque en esa época los requerimientos vitamínicos son mayores.

Se considera la posibilidad de que estas formas de bocio simple, sin aparente sintomatologia, pueden transformarse en otras con distiroidismo o hipertiroidismo, sea por persistencia de las causas que las motivaron, o por desatinada administración de medicamento.

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Anestesia raquídea controlada*

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EN el Hospital de La Samaritana de Bogotá se ha practicado en el curso de los últimos diez años un sistema de raquianestesia cuyas principales características se resumen en dos hechos fundamentales:

1. Control de la altura de la anestesia;
2. Ausencia de fenómenos tóxicos comunmente observados en esta clase de anestesia.

Hasta el presente se han practicado cerca de 5,000 anestesias por el método motivo de esta comunicación y las conclusiones que presentamos se basan en el análisis cuidadoso de los registros de 2,000 casos.

Como agente anestésico hemos usado el producto conocido con el nombre de "METYCAINA," cuyas propriedades farmacológicas son bien conocidas: su toxicidad empleando la vía sub-cutánea es inferior a la de la cocaína y comparable a la de la novocaína; intravenosamente es tres veces más tóxica que la novocaína. En poder anestésico parece superior al de la novocaína. Usamos ampolletas al 10 por ciento especialmente fabricadas para su uso en la raquianestesia y con un contenido de 150 mg.

Para controlar la altura de la anestesia tenemos en cuenta ciertos principios físico-químicos que gobiernan la difusión de los cristaloides en solución. Estos principios son los siguientes:

1. La extensión de la anestesia hacia arriba es directamente proporcional a la rapidez de difusión del anestésico inyectado en el canal espinal.

2. Es inversamente proporcional a la rata de fijación del anestésico por el tejido nervioso.

3. Es directamente proporcional al volumen del líquido inyectado.

4. Es directamente proporcional a la rapidez de la inyección.

5. Es inversamente proporcional a la preción de líquido céfalo raquídeo.

6. Es directamente proporcional a la gravedad específica de la solución.

7. Depende de la posición del cuerpo del enfermo cuando existe una diferencia en la gravedad específica entre la solución inyectada y el líquido cefalo raquídeo.

La posición de Trendelenburg acelera la extensión de la anestesia hacia arriba, mientras que la posición de Fowler la retarda.

En la anestesia raquídea controlada tal como nosotros la practicamos, los factores que dominan la técnica son:

1. La aspiración de determinada cantidad de líquido céfalo raquídeo y su mezcla con cantidades variables de la solución de metycaina al 10 por ciento para formar un volumen determinado y exactamente medido que se inyecta en el canal raquídeo;

* Presentado en la V Asamblea Internacional del Colegio de Cirujanos, Lima, Peru, marzo, 1946.

2. La inyección de esta mezcla de solución de metycaina y líquido céfalo raquídeo a una velocidad fija; y

3. La posición del cuerpo del enfermo inmediatamente despues de la inyección hasta obtener la altura anestésica deseada.

Los fenómenos tóxicos observados en la raquianestesia se han explicado por la parálisis del simpático, ocasionada por la anestesia de los rami-comunicantes. Conocida la función vaso-constrictiva del simpático su parálisis ocasiona una vaso-dilatación con el consiguiente descenso de la presión arterial y la acumulación de la masa saguínea en el sistema splacnico. Este hecho produce una disminución del aporte sanguíneo a los centros nerviosos con la consiguiente merma en la cantidad de oxígeno suministrado la cual produce trastornos en el funcionamiento de tan importantes centrol vitales.

Para remediar este hecho inevitable en la práctica de la raquianestesia, hemos empleado a título profiláctico y de manera sistemática la efedrina inyectándola con anterioridad a la inyección anestésica. Hemos observado que una dosis de 0.05 gr. de sulfato de efedrina cumple a satisfacción con este propósito de impedir el descenso de la presión arterial y sólo en muy contados casos esta dosis profiláctica debe repetirse en el curso de la anestesia por observarse tendencia a un descenso en la presión sanguínea. Este último hecho ha sido observado en algunos casos de anestesia por encima del borde costal y parece estar de acuerdo con la parálisis de la casi totalidad del simpático que acompaña este anestesia que en ocasiones se extiende hasta el cuello.

La técnica usualmente empleada consiste en el registro de la presión arterial y la inyección profiláctica de 0.05 gr. de sulfato de efedrina.

Se coloca al enfermo en la posición sentada o en el decubito lateral, según el caso, se aplica tintura de merthiolate en el sitio de la punción, siempre entre la 4° y 5° vértebra lumbar, se anestesia la piel, tejido celular sub-acutáneo y ligamento interespinoso; con una solución de metycaina al 1 por ciento, empleando 2 cc. se introduce el trocar o guía de Pitkin a través de la piel y ligamento interespinoso, se introduce la aguja de punción calibre 22 a través del trocar a guía de Pitkin y cuando la aguja perfora la dura madre se experimenta una sensación de sobresalto que indica que se ha penetrado en el espacio subaracnoidiano. Con una jeringa de 5 cc. se aspira la cantidad requerida de la solución de metycaina y empatando la jeringa a la aguja de punción se aspira la cantidad de líquido céfalo raquídeo necesaria para completar el volumen indicado para la anestesia deseada. Se inyecta a razón de 1 cc. por 5 segundos y una vez terminada la inyección se retira la aguja con el trocar o guía y se coloca al enfermo en la posición indicada según la altura de la anestesia que se desea, posición que se conserva por el tiempo fijado para cada variedad de anestesia.

La evolución de la anestesia se anota en la hoja respectiva y allí mismo se anotan las determinaciones de presión arterial pulso y respiración a períodos regulares de 5 y 10 minutos. Cuando hay un descenso de la presión arterial se corrige esta situación con la inyección de otros 0.05 de sulfato de efedrina.

No se observan sino muy rara vez, náuseas, vómito o distención abdominal, evitándose de esta manera la tensión

(Continuado en página 134)

Consideraciones sobre 10,000 anestesias

Practicadas en el Hospital Obrero de Lima*

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LA cirugía, con los progresos alcanzados en los últimos años, ha contribuido para que la anestesia adquiera mayor desarrollo é importancia a tal punto que hoy el anestesista juega un papel preponderante en el desempeño del trabajo quirúrgico, ya que al presentar al paciente con una insensibilidad absoluta y una completa relajación muscular, permite al cirujano realizar intervención más complicada con el mínimun de esfuerzo.

La dirección del Hospital Obrero de Lima, comprendiendo la importancia de esta rama, dotó al Departamento Operatorio con un Servicio de Anestesia a cargo de un Médico Jefe, un Médico Asistente y tres enfermeras anestesistas que en el curso de 5 años de labor han practicado más de 10,000 anestesias de las diferentes clases actualmente en uso.

Debemos señalar que nuestra conducta la hemos orientado en el sentido de llevar siempre el anestésico ó la mezcla anestésica que proporcione a cada paciente el máximun de insensibilidad, reduciendo al mismo tiempo toda posibilidad de contratiempos y accidentes durante el acto quirúrgico.

La supresión del dolor la hemos conseguido de dos maneras: por narcosis, con anulación de las funciones cerebrales y sueño profundo, y por anestesia periférica (raquídea, epidural y local), con ausencia de dolor pero con la conservación de las funciones de relación.

Tanto una como otra manera requieren un estudio previo del paciente, que permista indicar la más apropiada para obtener la anestesia ideal, ó sea la que proporcione el resultado máximo con el mínimun de alteración de las funciones orgánicas.

El exámen clínico completo permite descubrir alteraciones patológicas que condicionan la elección adecuada del anestésico a tales casos, otro factor que tampoco debe olvidarse y que juega un papel preponderante por pertenecep a la esfera psíquica y se halla constituído por el índice de sensibilidad y por las reacciones propias de cada sujeto..

El anestesista considerará especialmente el estado de los pacientes para evitar en lo posible que el *shock* psíquico se junte al *shock* físico determinado por la intervención. De este moda los enfermos pusilánimes serán cuidados especialmente, creándoles una atmosfera de confianza y optimismo que contribuya a que el paciente descanse en la convicción de que no sufrirá en el acto operatorio.

La susceptibilidad individual está también de acuerdo con el tono del

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sistema neuro-vegetativo, asi los hipervagotónicos responderán más fácilmente con dosis menores de anestésicos; en cambio los hipovagotónicos y simpaticotónicos presentan una resistencia considerable a la anestesia, exigiendo una mayor cantidad de anestésico para alcanzar los efectos deseados.

Hemos de señalar también la importancia de la medicación preanestésica que suprime ó sirve de sedante en los estados de excitación y aumenta la potencia de los anestésicos.

La asistencia de los enfermos durante el acto quirúrgico es también de gran importancia, especialmente en lo que se refiere a mantener permeables las vias respiratorias y al suministro suficiente de oxigeno, asi como también para la regulación de las funciones hemodinámicas del paciente por el control del pulso y de la presión arterial, suministrando el volumen necesario de sueros, plasma ó sangre total.

Finalmente el cuidado de los enfermos no termina en la sala de operaciones, pues de ésta pasarán a las salas de observación post-anestésica los operados que a juicio del anestesista requieran un tratamiento especial antes de ser evacuados a sus respectivos pisos. Así se evitan fracasos que hoy dia ya no se presentan porque el anestesista debe estar atento a suministrarle a su paciente todo lo que las circunstancias operatorias le obliguen a prestarle para conservar su equilibrio bioquímico.

Hechas estas breves observaciones, pasemos a ocuparnos del comentario de cada uno de los grupos de anestesias efectuados.

ANESTESIA LOCAL

Con el descubrimiento de la Novocaína por Einhorn en 1905 la anestesia local ha ganado mucho terreno pudiendo afirmarse en la actualidad que no hay tronco nervioso en la economía que no sea accesible a la aguja de la inyección anestésica.

Conseguido el ideal de Braun, uno de los creadores de la anestesia local, de encontrar un anestésico de escasa ó ninguna toxicidad, de fácil solubilidad en agua ó suero fisiológico y que resistiera sin descomponerse ó atenuarse su acción anestésica á la esterilización, ha permitido llevar a cabo operaciones tan laboriosas como importantes. Hoy se puede afirmar que muy pocas operaciones escapan al empleo de la anestesia local, ya que operaciones como gastrectomías y de las vías biliares, operaciones del cráneo, del cuello, tiroidectomias, laringectomias, etc., para no citar sino las más importantes, caen bajo su dominio.

La creación de nuevos métodos y el mejoramiento de algunas técnicas ha aumentado enormemente el número de operaciones con anestesia local, como lo demuestran las estadísticas.

Téngase por entendido que el vocablo local lo empleamos, ya sea que se trate de la anestesia por infiltración cual serîa por ejemplo, la que se efectua bajo la piel al bañar el anestésico directamente las terminaciones nerviosas del tejido celular subcutáneo, ó ya sea la anestesia de troncos nerviosos de mayor ó menor tamaño que inervan una determinada región, llamada también por esta circunstancia anestesia regional.

Naturalmente que con la complicación de las técnicas, ya que hoy dia no se sigue el método de Crile, ó sea el descubrimiento previo de los nervios para interrumpir su conducción nerviosa. Hoy los alcanzamos a través de la piel y sus envolturas, guiándonos solo por

nuestra anatomía y puntos de reparos en los huesos y partes blandas. Esto indica que el éxito de una buena anestesia local depende en gran parte de la habilidad y pericia del que la ejecute.

En la escuela quirúrgica de antaño, el cirujano poseía una destreza invidiable, ya que él mismo preparaba y realizaba su anestesia local, más hoy dia con la subdivisión del trabajo y el aumento del movimiento operatorio, no le permite disponer del tiempo necesario para estos menesteres que hoy son de incumbencia de los anestesistas.

Indicaciones y contraindicaciones.— Sus indicaciones son muy vastas como ya lo hemos expuesto, pues hace tiempo que dejó de ser tributaria sólo de la pequeña cirugía.

En cuanto a los pusilánimes y sujetos nerviosos que constituían antes de ahora la principal contraindicación, se ha reducido enormemente su número ya que con un buen preanestésico y sedación con suero morfinizado gota a gota por ejemplo, toleran perfectamente la operación con anestesia local y prolongan la acción de ésta.

Es en los niños, a nuestro modo de ver, donde se encuentra su principal contraindicación, por el temor y el miedo al acto quirúrgico. Pero aun así se puede inducir con cualquier anestesia por inhalación y combinarla con la local como la hemos efectuado en muchos niños.

ANESTESIA CAUDAL

Cathelin, en 1901, ideó el método de introducir un anestésico en el conducto sacro, consiguiendo con ello una anestesia del periné, ano y genitales externos.

Le abandonó por mucho tiempo, injustamente, este método anestésico más que nada debido a que requiere una rigurosa técnica en su ejecución. A tenido algunos cultivadores como: Stockel y Laemen en Alemania; Lundy, Hingson y Edwards en Estados Unidos. Es una magnifica anestesia para operaciones que no demanden mucho tiempo, en las regiones anal, perineal y de los genitales externos.

Usamos corrientemente soluciones de novocaína al 2 por ciento ó metycaína al 1½ por ciento. La cantidad de anestésico que inyectamos es de 30 cc. La anestesia se produce a los 10 minutos aproximadamente y su duración es alrededor de 30 minutos.

SERVICIO DE ANESTESIA DEL HOSPITAL OBRERO DE LIMA

Anestesias	1941	1942	1943	1944	1945	Totales
Loco-Regio.	888	1532	1564	1381	1216	6581
Raquídeas	56	103	188	156	214	717
R. Continuas			3	25	31	59
Epidurales			120	173	161	454
Gases-Eter	131	68	27	21	17	264
Barbitúricos	246	537	321	378	474	1956
Totales	1321	2240	2223	2134	2113	10,031

La usamos sistemáticamente desde hace tres años en operaciones de las regiones anotadas. El mayor número lo hemos efectuado en Hemorroidectomias donde a nuestro modo de ver encuentra su principal indicación, ya que con una simple inyección se consigue una anestesia que relaja ampliamente el esfinter anal, y hace procidentes los hemorroides internos, facilitando la acción del cirujano. Es una anestesia completamente innocúa de indicaciones precisas encontrando su principal contraindicación en las malformaciones del canal sacro coxigeo y prolongación del saco dural.

El porcentaje de resultados insuficientes que hemos obtenido con esta anestesia es de menos del 10 la que, nosotros atribuímos posiblemente a ta-

bicamientos dentro del conducto sacro, que impiden que el anestésico se difunda debidamente.

ANESTESIA RAQUIDEA

Ninguna de las anestesias ha suscitado tantas controversias como la requídea en más de 40 años de su existencia. Indudablemente que estas controversias incidían sobre sus peligros y poca posibilidad de control.

Respecto de los peligros, está plenamente demostrado que esto son más quiméricos que reales, si se ajusta extrictamente a una técnica cuidadosa. Y en cuanto a lo segundo, es uno de los métodos anestésicos más facilmente controlables por el experto.

La anestesia raquídea, es una anestesia regional radicular, producida por la impregnación del anestésico en las raíces de la médula espinal en su travesía sub-aracnoidea. El agente anestésico es llevado por el líquido céfalo requideo que le sirve de vehículo.

El agente anestésico que más hemos usado ha sido la novocaína y la metycaína a las dosis de 2 miligramos por kilo de peso. Con ésta anestesia hemos obtenido los éxitos más francos, ya que nos adelantamos a contrarrestar los síntomas molestos que a veces la acompañan, ya sean provocados por la anestesia ó por las manipulaciones quirúrgicas y que se traducían en hipotensión, naúseas y vómitos, etc. Hoy día es raro que esto suceda.

El control constante de la presión arterial, pulso y respiración permiten yugular cualquier alteración a su inicio. Hemos observado que en los pacientes de tensión baja se presentan con más frecuencia estos síntomas, y con ellos usamos una terapéutica profiláctica, que consiste administrárles previamente suero glucosado hipertónico, si asi lo permite el metabolismo glúcido. La ventaja que ello aporta es de que desintoxica, aumenta los depósitos de glucogeno, aumentando así las resistencias del aparato cardio vascular y retículo endotelial, a la agresión del anestésico, del trauma operatorio y a la absorción de sustancias proteícas y lípicas durante y después de la intervención. La cantidad de suero glucosado hipertónico que administramos oscila entre 100 á 200 cc. por vía endovenosa.

En cuanto a la altura a la que hemos llevado el anestésico, varía según con la clase de intervención que se practique: piso superior del abdomen, región supra-diafragmática hasta el 1° ó 2° segmento torácico por encima de la línea mamilar. Esto lo conseguimos sin seguir el método de Jonnesco de punciones altas. Por lo regular colocamos nuestro enfermo en posición decúbito lateral y efectuamos la punción raquídea en el ler. ó 2° espacio lumbar y usando soluciones hipperaras, colocamos inmediatamente la mesa en inclinación de 10° en Trendelenburg, luego de colocar al enfermo en decúbito dorsal.

Bastan pocos minutos para observar cómo asciende la anestesia, y una vez que alcanza el límite deseado se endereza la mesa. Esto tiene la ventaja de que, en la región lumbar es más fácil de practicar la punción y hay menos peligro de lesionar la médula ya que en la región dorsal es menor el espacio subdural; si se dá mayor inclinación a la mesa puede ascender la anestesia y pasar la región bulbar, alcanzando los centros cerebrales y convertirse en una anestesia general como lo hacen algunos cirujanos para intervenciones en el cuello y cara.

A nuestro modo de ver esto desvirtúa el carácter regional de la raquianestesia, ya que con una anestesia local, para las que hay técnicas precisas, se pueden efectuar tiroidectomías y resecciones de maxilar superior é inferior sin llegar a esos malabarismos anestésicos.

Hoy está perfectamente demostrado que los centros circulatorio y respiratorio son los que mejor se defienden de la agresión anestésica, siempre y cuando no se pasen los límites de su tolerencia, pero repetimos que no se debe exigir a una anestesia más de lo que la experiencia enseña.

Las indicaciones son todas las operaciones del abdomen que por su laboriosidad y dificultades exigen un silencio abdominal, que determinan una laxitud en los órganos abdominales y facilita la acción del cirujano, operaciones ginecológicas, urológicas y otras del piso superior del abdomen; sus contraindicaciones son en las de hipotensión muy baja, sujetos caquectizados, traumatizados ó con síntomas de hemorragia interna.

Las secuelas que en algunos raquianestesiados suelen presentarse, tales como cefáleas, incontinencia de orina, son de fácil yugulación.

ANESTESIA RAQUIDEA CONTINUA

William T. Lemmon, de Philadelphia, administró la primera anestesia raquídea contínua a un ser humano el 10 de abril de 1939. Esta clase de anestesia por él ideada ha tenido tal aceptación que a pesar del corto tiempo de su creación se encuentra bastante difundida, y esto se explica si se tiene en cuenta las enormes ventajas que posee.

La técnica no tiene mayor variante que la punción raquidea corriente, con la diferencia que se efectua con agujas de metal maleable, que quedan fijas en el sitio de puntura y unidas por un tubo de jebe de paredes gruesas y de luz estrecha á una jeringa de 10 ó 20 cc. que contiene la solución anestésica. Dicho tubo tiene una longitud de 75 cm. y una capacidad en su luz de 2 cc.

La punción debe efectuarse en decúbito lateral y la colchoneta de la mesa debe tener una altura aproximada de 12 cm. y una ranura que permita el paso de la aguja a la región lumbar que es el sitio (2° ó 3er espacio) donde generalmente efectuamos la punción. Damos inclinación a la mesa y llevamos nuestra anestesia hasta el sitio deseado. Empezamos con una dosis de inducción; 5 cc. de una solución de metycaína ó novocaína al 1 por ciento ó sea 50 miligramos de anestésico, para irla aumentando progresiva y lentamente hasta 100 miligramos ó sea 10 cc. en un período de tiempo que fluctúa entre 5 y 10 minutos.

Generalmente, con esta dosis se consigue anestesia que dura alrededor de 45 á 60 minutos, al cabo de los cuales hay que agregar nuevas dosis. Tanto en esta anestesia como en la requídea total, solemos agregar 1 ó 2 centigramos de morfina al suero, gota á gota, que al profundizar la sedación del enfermo prolonga el efecto del anestésico.

Las indicaciones de esta anestesia, por consiguiente, son precisas, es decir, en intervenciones dilatadas que requieren más de 2 horas. La usamos frecuentemente para Gastrectomias y otras operaciones laboriosas del abdomen.

Sus contraindicaciones son las mismas que la requídea única. Tiene la ventaja sobre ésta que se puede retirar parte de la anestesia suministrada si el caso lo requiere, y el de poder agregar nueva dosis de anestésico a intervalo

determinado, inyectando grandes dosis, a la larga, sin peligro alguno.

A los pacientes anestesiado con requídea única ó fraccionada, los sometemos en el postanestésico por varios días a la hiperventilación para evitar la atelectasis pulmonar, suministrándoles oxígeno y gás carbónico, durante 15 minutos mañana y tarde.

ANESTESIA ENDOVENOSA

Los barbitúricos administrados por vía endovenosa constituyen en la actualidad un método de anestesia que ha alcanzado gran aceptación en los principales centros quirúrgicos. Este tipo de anestesia es preferible, principalmente cuando están contraindicadas otras formas de anestia, o cuando se estime aconsejable por sus ventajas la vía endovenosa. Debe ser usada preferentemente en procedimientos operatorios de corta duración, pero como su empleo suscita casos de depresión respiratoria, suministramos oxígeno para prevenir cualquier tendencia de anoxemia; y para obtener una mayor relajación muscular lo complementamos con una mezcla de protóxido y oxígeno.

Algunos autores señalan a los barbíturicos como drogas relativamente innocuas que no afectan al corazón, o al funcionamiento hepático y que los casos fatales debidos a sobre-dosificación en pacientes en que no hay obstrucción de las vías aéreas son muy raros; sin embargo nosotros, en tres oportunidades, hemos tenido que suspender la administración del pentothal por presentar los pacientes fenómenos de obstrucción respiratoria ocasionados por espasmos laringeos.

También hemos utilizado los barbitúricos para complementar otras anestesias, consiguiendo prolongar su acción durante un tiempo más amplio. Esta conclusión tiene la ventaja de que se aprovecha convenientemente la utilidad de uno por uno de los agentes con un mínimum de dosis de cada uno de ellos, ya que la asociación de diversos compuestos de acción sinérgica multiplican el efecto del conjunto.

Siempre utilizamos soluciones recién preparadas. La dosis debe ser individualizada rigurosamente según el paciente. Se comienza con una dosis inicial, durante o inmediatamente después de la inyección suelen presentarse contracciones de los músculos de la cara que luego pasan; se sigue administrando la solución en forma intermitente hasta alcanzar la anestesia requerida; si se observa un retorno a la tonicidad de los músculos se administran nuevas dosis adecuadas. Al establecerse la anestesia, la respiración se hace más lenta, pero generalmente más profunda que en estado normal; ausencia del reflejo palpebral, los globos oculares regularmente están fijos, las pupilas moderadomente contraídas y ausencia de las reflejos cutáneos. La presion sanguínea, generalmente, desciende durante la inducción, aunque vuelve pronto a su nivel normal. En los casos de *shock* el descenso de la presión es más marcado, por lo que utilizamos soluciones en concentraciones mínimas administrando simultáneamente plasma y coramina.

Este método no obstante gozar de cierta popularidad entre algunos autores en los casos obstétricos, creemos que no constituye el agente ídeal por el efecto depresor del centro respiratorio capa de provocar la asfixia del niño. Lo consideramos absolutamente contraindicado en todo proceso que disminuya la capacidad respiratoria de los pacientes.

(Continuado en página 128)

Nueva técnica y sus ventajas para la extracción del ovoide cefalico en la cesárea segmentaria

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SAN JOSÉ, C. R.

LA técnica que paso a exponer se recomienda y tiene empleo, tanto en la cesárea segmentaria transperitoneal como en la extraperitoneal Ofrece apreciables ventajas en relación a la técnica que hasta la actualidad se viene practicando en nuestro Servicio de Obstetricia del Hospital San Juan de Dios, de San José de Costa Rica, la cual no es otra que la citada por los autores de la literatura médica consultada. He creído oportuna la presente comunicación pues en la bibliografía que se ha examinado no se ha podido encontrar ningún procedimiento escrito que se asemeje a la conducta que se preconiza para la extracción de la cabeza fetal en la histerotomía baja suprapúbica.

La experiencia que someto a la consideración está basada en las últimas once secáreas realizadas, con resultado completo satisfactorio, a este respecto.

No cabe duda que la preocupación máxima del tocólogo en una operación de cesárea se manifiesta en el momento de la extracción fetal, la que necesita un tiempo irregular en comparación con el requerido en las intervenciones, que son regladas y casi siempre ocupan un horario exacto en la ejecución.

La preocupación estriba precisamente en que se pierde el ritmo quirúrgico que se había logrado llevar hasta el momento preciso de acercarse al feto; ritmo que nos interesa conservar, ya que, indiscutiblemente, guarda relación estrecha con los intereses fetales.

Las razones por las cuales podemos perder, en la etapa de extracción fetal, la pauta cronométrica que toda intervención reglada requiere, son obvias. Principalmente dependen, amén de una amplia incisión, de la situación en la pelvis del ovoide fetal. Dependiente de la situación de la cabeza, nace la dificultad para su extracción, y por tanto, la pérdida del ritmo que conviene conservar siempre.

La técnica propuesta presenta la continuidad normal de ese tiempo que nos ocupa, uno más asequible que las constituyen la técnica quirúrgica de la cesárea.

Se han preconizado distintas maniobras é instrumentos, forceps corrientes y especiales, etc., que según mi modesto concepto complican, más bien que benefician, la situación, pues estrechan el campo operatorio por razón de su natural espesor. Por otra parte, las extracciones que se realizan, una vez aprehendido el ovoide son hasta cierto punto antinaturales y traumáticas.

La presente técnica se basa en la observación de que en todos los casos realizados, la extracción ha sido sencilla, rápida y no ha precisado la ingerencia de instrumentos, a pesar de las variadas posiciones, modalidades de encajamiento, de volúmen y de formas de la cabeza fetal.

La técnica consiste sencillamente en extraer la cabeza en occípito anterior en vez de hacerlo en occípito posterior que siempre requiere la ayuda del forceps; y por el contrario en occípito anterior es raro el caso en que se necesita dicho instrumento.

Creo más ventajosa esta técnica que la extracción del niño por versión, cuando ésta reune todas las condiciones apropiadas del caso (útero hipotónico, líquido amniotico suficiente, bolsa íntegra, etc.), porque el esfuerzo de la extracción de la cabeza en la versión es igual o más difícil que la extracción de ésta en occípito anterior, sumado a los peligros y trabajo de la versión.

Los tiempos para la extracción de la cabeza en occípito anterior deben hacerse en el orden siguiente:

1. Liberación de la cabeza de la pelvis, si estuviere encajada.

2. Colocar ésta en occípito anterior, posición en que se encuentra en la mayoría de los casos. Este tiempo es de suma facilidad.

3. Introducir el occipucio con su caput, cuando éste se ha formado, en la abertura quirúrgica uterina.

4. Deslizamiento del labio superior de la brecha quirúrgica, haciéndolo llegar hasta la nuca fetal, para facilitar la deflexión.

5. Extracción de la cabeza por deflexión. Hay que aclarar que este último tiempo se facilitará extraordinariamente, si la mano libre del operador, ó bien del ayudante, presiona el fondo del útero (maniobra abierta de Kristeller). Se tramita de este modo aprovechando la fuerza axil, al igual que sucede en la expulsión fisiológica en el parto normal, un movimiento de basculación cuyo punto de apoyo radica en la articulación atlanto-occipital. La otra mano tira del menton hacia afuera, ayudando la deflexión de la cabeza. La colocación adecuada de esta mano es lateral a la cabeza fetal, que como se ha dicho anteriormente, se halla en occípito anterior, o sea sagitalmente.

Otras veces, por la simple presión en el fondo uterino y tirando con los dedos del caput (cuando existe) o sucesivamente de las bolsas frontales, arcada orbitaria y bóveda palatina, se puede extraer la cabeza del feto sin dificultad.

La incisión uterina usada en estos casos ha sido por disección roma con los dedos, y transversalmente en el segmento inferior, siendo como es de suponer, el campo más estrecho que cuando se realiza la incisión cóncava hacia arriba, a lo Funk, con las tijeras abotonadas.

Entre las ventajas de esta técnica, tenemos las siguientes:

1° Substituye los diámetros submentonianos por los suboccipitales que son más reducidos, máxime cuando existe un caput exagerado por una labor prolongada. En este caso, el diámetro submento occipital, sumamente agrandado, determina casi siempre al extraer la cabeza en occípito posterior, desgarros uterinos, bien en forma de T, bien alargando la incisión tranversalmente, comprometiendo de esta manera las arterias uterinas. Cuado la incisión es vertical la prolonga hacia la cervix o hacia el fondo uterino desgarrando el peritoneo cuando es extraperitoneal. En cambio en occípito anterior, cuando existe un caput grande, éste es el primero en salir por la herida quirúrgica y no aumenta ningún diámetro y, además, favorce la extracción de la cabeza, sirviendo de punto de apoyo.

2° En la mayoría de los casos la cabeza se puede extraer sin forceps.

3° En caso de que el campo operatorio resultara muy reducido y se hiciera imposible la extracción con la mano, se puede hacer uso de un forceps pequeño, lo mismo que en occípito posterior, siempre con las ventajas anteriormente apuntadas.

4° Es la técnica más logica porque imita el parto fisiológico, en accípito anterior, en vez de ser en occípito sacro o posterior, en cuyo caso los movimientos de extensión son más dificultosos que los de flexión de la cabeza al salir ésta al exterior.

CONSIDERACIONES SOBRE 10,000 ANESTESIAS

(Continuada de página 125)

ANESTESIA GENERAL

Gases anestesicos

Antes de la implantación del Servicio de Anestesia en el Hospital Obrero de Lima, sólo se usaba en alguno que otro Hospital, el protóxido de nitrógeno en combinación con el oxigeno y el gas carbónico. Fuímos nosotros los primeros en usar en nuestro país una máquina de anestesia a cinco gases: ciclopropano, ethileno, protóxido, de nitrógeno, gas carbónico y oxigeno. El cuanto al primero, o sea el ciclopropano, es el más frecuentemente hemos usado, porque su inducción es más rápida consiguiendo el sueño más fácilmente que los otros gases, produce mejor relajación y el despertar se realiza sin ninguna molestia.

En cambio el ethileno y el protóxido de nitrógeno, no dan tan buena relajación muscular aunque se aumente la dosis, y el despertar no es tan agradable como con el ciclopropano. La ventaja que tiene esta anestesia, es en cirugía pulmonar, donde se requiere dehiperpresión, que al actuar sobre el pulmón sano lo distiende, facilitando la hematosis que se halla disminuída en estos casos permitiendo suministrar la cantidad de oxígeno requerida.

La usamos como anestesia complementaria en los casos en que las otras nos resulten insuficientes.

RESUMEN

Hemos practicado hasta el 31 de Diciembre de 1945, según los cuadros adjuntos, las siguientes anestesias:

Locales o localizadas	6,581
Raquídeas	717
Raquídeas-continuas	59
Epidurales	454
	7,811

anestesias localizadas, o sea un total de 76.5 por ciento; anestesias por barbitúricos 1,956 o sea el 22 por ciento y 264 anestesias por gases o sea el 0.8 por ciento; lo que dá un total de 10,031 anestesias.

Es de llamar la atención que desde fines del año 1942, por motivos de la guerra, no pudimos contar con la provisión de tubos de gases hasta fines del año 1945.

La mortalidad entre las 10,031 anestesias imputables a éstas ha sido de 2 operados. Un operado de quiste hidatídico del pulmón, en el cual, por las maniobras sobre el mediastino, se determinó un síncope cardíaco, del que no pudo ser sacado a pesar de los fuertes estimulantes cardíacos que se le administraron, inclusive la inyección ventricular como también el masaje cardíaco practicado. El otro fué un enfermo en paupérrimo estado físico, caquectizado por una septico-piohemia, y al que se le trataba de abrir abscesos múltiples. En ambos se usaba gases anestésicos.

Debe preferirse la histerectomía subtotal a la total en indicaciones de histerectomía porlesiones no malignas*

EDUARDO BELLO, F.I.C.S.
LIMA, PERU

MI modesta experiencia en estos casos de extirpación del útero es favorable al empleo de la historectomía subtotal por las razones que voy a exponer.

Desde la ya remota época de mi iniciación en la práctica quirúrgica ginecológica se discutía, y aún se discute, cual de esas intervenciones quirúrgicas debía emplearse para extirpar un útero fibromatoso, en los casos de salpingitis dobre supurante, y en todas las lesiones crónicas no malignas en que es necesario operar extirpando los órganos genitales femininos internos para obtener la curación de la paciente.

La histerectomía subtotal era utilizada de preferencia por los antiguos operadores temerosos de abrir la vagina, siempre infectada, desde el abdomen; eran operadores entonces que intervenían con asepsia imperfecta, y perdían muchas de sus operadas por infección. Además, la técnica operatoria de la histerectomía total era en esa época también controvertida tratándose de intervenciones por vía abdominal, y sólo pocos operadores se servían de ella. Después, perfeccionada su técnica, la histerectomía total fué ganando partidarios, y así con ellos multiplicándose las intervenciones con exéresis total del útero, que se designaban panhisterectomías, en los casos donde había indicación de extirpar los órganos genitales internos de la mujer.

Se intensificó luego la divergencia de opinión entre los apasionados por las nuevas técnicas de histerectomía total, y los conservadores experimentados en el valor de los beneficios posteriores para la paciente y de la inocuidad relativa de la subtotal, que exageraban, deduciendo que debía utilizarse siempre tratándose de lesiones no malignas. Esta discrepancia de opiniones aún subsiste. En trabajo de los doctores McKinnon y Counceller, de la "Clínica Mayo," publicado en "Surgery, Gynecology and Obstetrics," se sintetiza fundándose en 2,684 casos de operadas por ambos métodos, las razones alegadas en favor de uno y de otro, tratándose de determinar cual de los dos debe elegirse según las condiciones de la paciente. Opuesto casi completamente en conclusiones es un trabajo del cirujano inglés. M. P. Reddington, de Bridgwater, extractado en "The Lancet." En resúmen, no hay uniformidad de criterio sobre el empleo preferencial de una de estas técnicas. Apoyándome en mi ya larga experiencia en ginecología operatoria expresaré al respecto en este trabajo después mi opinión personal, porque creo que la elección acertada en los casos benignos entre esas intervenciones es de gran valor.

Educado practicamente en cirugía por los distinguidos iniciadores de los trabajos clínicos y operatorios de ginecolo-

* Presentado en la V Asamblea Internacional del Colegio Internacional de Cirujanos, Lima, Peru, marzo, 1946.

gía en esta Capital, doctores Nestor Corpancho y Constantino T. Carvallo, y actuando de auxiliar del servicio quirúrgico y ginecológico del Dr. Nestor Corpancho, el cultor mas antiguo en el Perú del ramó ginecológico y remplazándolo en la jefatura de ese servicio al desaparecer prematuramente ese laborioso y dinámico maestro, he dedicado preferencialmente mis esfuerzos profesionales al tratamiento médico y quirúrgico de las enfermas de mi servicio del hospital de mujeres de Lima, y especialmente de las afectadas de lesiones del aparato genital, operando casi cuotidianamente durante más de cuarenta años; tareas que aun realizo, aunque con menor intensidad, porque debo permitir que operen también mis auxiliares para que ellos dominen igualmente las prácticas, técnicas con las demás labores quirúrgicas, que sólo se consigue por práctica personal. En el largo tiempo de mi jefatura del servicio, mis sucesivos colaboradores han sido todos selectos, y algunos de ellos se han elevado después al rango de cirujanos y ginecólogos de reputación.

Rememoro lo anterior para justificar mi intromisión en el desacuerdo interminable en la apreciación de las características y secuelas postoperatorias que determinan la indicación preferencial de una u otra técnica de histerectomía, total ó subtotal, en el tratamiento quirúrgico de las lesiones no malignas del aparato genital femenino interno, cuando hay indicaciones de exéresis uterina; ese desacuerdo, como sabemos, existe todavía entre cirujanos experimentados por series de millares de intervenciones de este orden, sobre la resolución de este problema en uno u otro sentido. He operado durante los largos años que regento el servicio, varios centenares de casos por lesiones no malignas, eligiendo en gran mayoría de ellos la histerectomía subtotal, intervención menos traumatizante y menos deprimente que la histerectomía total, por tratarse de ordinario de pacientes ya debilitadas por hemorragias o el proceso morboso prolongado, y porque las secuelas y defectos que se atribuyen a la subtotal no habían complicado los períodos postoperatorios inmediato y remoto de mis primeras operadas con esa técnica, la primera utilizada en nuestro medio. Con la experiencia de entonces y después, continúo considerando la subtotal como la mas apropiada en el mayor número de casos de indicaciones operatorias por lesiones no malignas genitales.

Estoy de acuerdo con lo expresado por el Dr. Reddington en su trabajo antes citado, sobre el valor de las funciones del cuello uterino, que es evidente, y creo debe conservarse ese lubrificador natural de la vagina en el orgasmo femenino, siempre que no esté alterado en forma dudosa. Ligeras cervicitis y leucorreas, que pueden curarse no por cauterizaciones químicas, sino por electrocoagulación superficial o algo profundizada si hay grandes alteraciones glandulares, desaparecen así o se atenúan mucho, quedando el cuello y sus funciones lubrificadores canservadas, y la mujer apta para seguir normalmente su vida conyugal, que imposibilitada muchas veces por las histerectomías totales suele crearle tragedias conyugales é infelicidad innecesarias. Las erosiones superficiales del cervix, que son frecuentes en las cervicitis crónicas, tambien curan tratadas con electrocoagulación, y son indicaciones de exéresis total del útero, salvo que haya en ellas características de dudosa orientación en sentido de malignidad.

El cuello debe extirparse con el cuerpo uterino, afirman algunos espe-

cialistas por constituir las cervicitis, asociadas ordinariamente con las lesiones benignas, foco persistente de infección, e iritis, úlceras y otras complicaciones sépticas, derivan de este foco infeccioso. Observaciones de casos complicados así son numerosos en las publicaciones médicas, pero no hemos encontrado ninguno en nuestra práctica y el tratamiento de esas cervicitis de la manera antes indicada, que las cura aún si son crónicas, hace desaparecer dicho peligro suprimiento el foco infectante, que lo origina segun Rosenow y Benedict. Por consiguiente, las erosiones catarrales del cervix no constituyen indicaciones imperativas de extirpar el cuello uterino.

Han comprobado los Drs. McKinnon y Counceller, como lo expresan en su antes citado trabajo, que las operadas de algunos cirujanos presentan pocas complicaciones por el muñón cervical después de la histerectomía subtotal, mientras que, por el contrario, las operadas de otros cirujanos presentan larga serie de alteraciones patológicas, por lo que se inducen a creer indispensable utilizar la histerectomía abdominal total en todos los casos con lesiones benignas. Esta discrepancia en los resultados deriva probablemente de la técnica de subtotal empleada, de cuyos detalles en ambas circumstancias no tratan. Oportunamente describiremos la técnica que hemos empleado, con resultados siempre satisfactorios.

Otro motivo de escoger rutinariamente la histerectomía total en las intervenciones impuestas por lesiones no malignas es considerar el muñón cervical conservado muy suceptible de ser con frecuencia posteriormente asiento de carcinoma trascurrido algun tiempo de la operación. Este supuesto es exagerado y pesimista, el carcinoma ó epitelioma del muñón conservado es en realidad complicación post operatoria rar. A los operadores de la "Clínica Mayo," cuyo trabajo estamos analizando, en el período de 5 años posteriores á la intervención por histerectomía subtotal no se les ha presentado esa grave complicación en 764 casos así tratados, y en nuestra práctica la hemos comprobado una sola vez en muy numerosos casos. Por consiguiente, esa supuesta posibilidad no justifica ni favorece el empleo exclusivo de la histerectomía total; como tampoco es probable ni orientadora la formación en ese muñón cervical de tumores benignos, segun Hyams, citado por McKinnon y Counceller, que solo se observan en rarísimos casos.

Los distinguidos cirujanos de la "Clínica Mayo," citados antes, han observado algunos casos de prolapso vaginal después de la subtotal, y ninguno después de la total, accidente que los obligó á hacer una operación plástica para remedirlo. En nuestras primeras intervenciones de este orden también más de una vez hemos debido emplear plásticas vaginales por prolapsos de la vagina postoperatorios meses o años después de histerectomías tanto subtotales como totales; pero desde que nos servimos de técnica con fijación al muñón cervical o extremo superior de la vagina seccionada en las totales, de los ligamentos redondos y anchos, esa complicación postoperatoria no se nos ha presentado. En consecuencia no podemos atribuir al prolapso vaginal postoperatorio valor alguno en favor de una u otra técnica.

En efecto, desde hacen ya bastantes años, acostumbramos después de abierto el abdomen y extirpado el útero, segun la causa de la intervención, total o parcialmente conservando la porción

vaginal del cuello, segun se trate de lesiones malignas o benignas, suturando luego los bordes vaginales en el primer caso, ó seccionando en el segundo el útero al nivel de la parte inferior del cuello, y formando por esta sección, oblicua del cuello dos labios adaptables que son suturados uno al otro cerrándolos con dos o tres puntos; luego, siguiendo la técnica de Graves (I), fijamos los muñones de los ligamentos anchos y redondos al muñón cervical, recubriendo después estos muñones solidarizados y toda la porción desperitorizada que ocupaba el útero extirpado con la hoja peritoneal anterior, cuidadosamente conservada, que unimos por sutura a la posterior, de ordinario de extensión reducida, ó al peritoneo del Douglass, cerrando en seguida el abdomen, con o sin drenaje según el caso, de infección o no. Este drenaje en los casos sépticos lo hacemos por vía vaginal, perforando el fondo de saco de Douglass y haciendo salir por esta perforación el dren, que es colocado siguiendo también las indicaciones de Graves, del abdomen a la vagina y nunca en sentido contrario, para evitar infección peritoneal desde la vagina, que trascurrido el tiempo necesario para hacer los tiempos anteriores de la intervención, por desinfectada que haya sido contendrá ya gérmenes salidos de las capas profundas de su epitelio.

Entre las complicaciones postoperatorias señaladas por los autores de trabajos sobre histerectomías, que se presentan con igual frecuencia en las totales y en las subtotales, no hemos tenido casos de obstrucción intestinal ni de parotiditis, pero sí en corto número de neumonias y de bronconeumonias, en general terminadas por curación. Embolias pulmonares hemos observado pocas veces después de histerectomías subtotales, fatales en dos casos; pero no podemos juzgar de su mayor frecuencia en totales que en subtotales porque estamos habituados á elegir siempre la histerectomía subtotal si la indicación de exéresis uterina deriva de lesiones benignas.

Retenciones de orina temporales hemos observado con frecuencia en el postoperatorio de las histerectomías subtotales y totales; pero en nuestros casos evacuada la vejiga por cateterismo aséptico y prolijo, las pacientes por la retención de orina no han presentado complicaciones urinarias graves. En lo que respecta a mayor frecuencia de las retenciones de orina postoperatorias, predominan en las totales donde la vejiga es mas traumatizada; por consiguiente en las totales será mayor el número de cateterismos necesarios, que son los causantes directos de las complicaciones urinarias.

Mortalidad. — Con la histerectomía total el porcentaje de mortalidad es más alto, según muchos observadores; más elevado todavía tratándose de casos con infección pelviana; por lo cual estiman y lo creemos que debe preferirse en los últimos la subtotal, con el respectivo drenaje abdominal, o drenaje vaginal perforando el Douglass. Además, la total es más traumatizante y compleja, deprimiendo por consiguiente más a la paciente, motivo adicional que nos ha impulsado mucho á preferir de ordinario al subtotal en intervenciones indicadas por lesiones no malignas. Con esta técnica de histerectomía la mortalidad en nuestras operadas ha sido mínima, y determinada las más de las veces por el estado de agotamiento de la paciente en el momento de la intervención, empleada de urgencia, ó por embolia pulmonar que tambien hemos observado en las totales, por neumonia, y en uno ó dos casos por peritonitis

postoperatoria, que consideran en las totales mucho mas frecuente cirujanos experimentados.

Los cirujanos que dan preferencia a la histerectomía total en las indicaciones de exéresis del útero por lesiones benignas, reconocen, sin embargo, que en la subtotal las reacciones postoperatorias de la paciente son menos intensas y más fugaces; que en las subtotales la frecuencia de complicaciones urinarias es menor por ser en ellas muy poco traumatizada la vejiga; que en las subtotales no hay peligro de hemorragias secundarias en los bordes de la vagina seccionada, como en las totales; y que en los casos de infección pelviana en el momento de intervenir, el promedio de mortalidad es menor en subtotales. Pero insisten en dar lugar preferencial a la histerectomía total para eliminar también el cuello suceptible, segun ellos, de presentar después alteraciones malignas, lo cual, aseverándolo, manifiestan haberlo observado muy raras veces. También sostienen que el muñón cervical conservado en las subtotales, contituye foco persistente de infección generador de iritis, úlceras etc. Nuestra modesta experiencia, como lo hemos manifestado anteriormente, coincide con la de ellos y de la mayoría de los cirujanos, en que solo se observan raros casos de carcinoma ó epitelioma en el muñón cervical conservado después de histerectomías subtotales, casos aislados y en número insignificante para constituir verdadero peligro de las subtotales. Tampoco el muñón cervical residual de la subtotal, infectado, puede considerarse como foco seguro de infecciones en otros órganos, su capacidad en ese sentido es dudosa, y no es escollo grave y necesariamente persistente de esa técnica de histerectomía porque las cervicitis y erosiones cervicales consecutivas en el muñón conservado del cuello pueden ser curadas facilmente con tratamiento local, de preferencia, como antes hemos manifestado, por electrocoagulación que las elimina radicalmente.

En resúmen, por todas las razones antes señaladas, intervenimos siempre por histerectomía subtotal en lesiones benignas, como miomas uterinos, infecciones anexiales bilaterales crónicas ó supuradas, etc. Elegimos esta operación ademas por su relativa benignidad, comparada con la histerectomía total, en enfermas de ordinario ya deprimidas por hemorragias persistentes ó prolongado estado séptico; también por ser raras en las subtotales las complicaciones postoperatorias, y si se presentan dominables con tratamiento apropiado, y las secuelas tardías evitables ó curables tratándolas debidamente.

Prolapsos vaginales postoperatorios no se producen ya en las histerectomías que ahora hacemos, con sutura de unión de los ligamentos anchos y redondos al muñón cervical en las subtotales, y a los bordes vaginales suturados cerrando la vagina por aproximación de ellos en las totales. Los casos de peritonitis postoperatorias en nuestras histerectomías han sido muy escasos por tener siempre la precaución de drenar la pelvis después de extirpado el útero por total ó subtotal y peritonizada la parte desprovista de peritoneo por esa extirpación; drenaje de ordinario por vía vaginal, perforando el fondo de saco de Douglass, y colocando el dren introducido del abdomen á la vagina, segun lo aconseja el maestro Dr. Graves. Neoplasia maligna del muñón cervical posterior a la intervención, sólo hemos observado en un caso, y creemos que en realidad es complicación muy rara, y que atendida oportunamente esa malignidad puede ser detenida en su evolución y curada, particularmente con radio.

La técnica de histerectomía que empleamos la hemos expuesto ya en el curso de estos comentarios. Resumiéndola ahora, sus tiempos son: Abertura del abdomen por insición media; liberación del útero y anexos si hay adherencias; desprendimiento por disección de la hoja peritoneal preuterina, que se conserva para posterior peritonización; división del cuello por sección angular anterior y posterior; cierre del muñón cervical así formado por suturas; peritonización de las parte denudadas de peritoneo por aproximación y unión de la hoja peritoneal anterior al resto de la posterior al útero, después de haber solidarizado los muñones de ambos ligamentos anchos y redondos al muñón cervical; drenaje vaginal del abdomen por perforación del Douglass y colocación de tubo de caucho fijado al borde de la perforación del Douglass y sutura completa de la pared abdominal.

Soy, pues, partidario convencido de la histerectomía subtotal en las indicaciones de extirpar el útero por lesiones no malignas del aparato genital femenino. Las objeciones que se hacen a la histerectomía subtotal, y las secuelas que se le atribuyen, son en realidad exageradas y sin verdadero valor práctico, como creemos haberlo demostrado en este trabajo, y sus ventajas para la paciente muy acentuadas.

Este trabajo, perfeccionado para someterlo a vuestra consideración, refleja lo que ha sustentado en otra oportunidad; pero creyendo de interés insistir en mis afirmaciones y detallar las razones que me han convencido de que debe preferirse la histerectomía subtotal a la total tratándose de exéresis por lesiones no malignas, me he tomado la libertad de hacerlo conocer en esta docta asamblea.

ANESTESIA RAQUÍDEA CONTROLADA

(Continuada de página 119)

de las suturas. Las complicaciones pulmonares se previenen colocando al enfermo una vez llevado a su cama en posición de Trendelenburg por tres horas, levantando los pies de la cama con soportes adecuados. El paciente puede tomar líquidos y alimentos antes, durante e inmediatamente después de la operación. La retención post-operatoria de orina es observada muy rara vez y con la cefalalgia ocurre lo mismo.

El *shock* quirúrgico nunca hemos tenido oportunidad de observarlo en los 2,000 casos estudiados en esta comunicación, lo cual se explica por el bloqueo al dolor que se produce en el campo operatorio.

La calidad de la anestesia con su completa relajación muscular es uno de los factores que más interesan al cirujano, permitiéndole realizar su técnica en condiciones muy ventajosas.

El capítulo de los Estados Unidos del Colegio Internacional de Cirujanos convida cordialmente à los miembros de todos los capítulos del Colegio Internacional de Cirujanos à asistir à su XII asamblea nacional, la cual juntarà el 28, 29 y 30 de septiembre y el 1, 2, 3, y 4 de octubre de 1947, en Chicago, Illinois, EE.UU. Véase la página 91 por detalles adicionales.